# UNIVERSITY OF ALBERTA

Effects of Media Representations around Mad Cow Disease
on Public Perspectives of Risk

by

Amanda Dawn Boyd

A thesis submitted to the Faculty of Graduate Studies and Research
in partial fulfillment of the requirements for the degree of

Master of Science
in
Rural Sociology

Department of Rural Economy

Edmonton, Alberta
Fall 2008

Library and
Archives Canada

Published Heritage
Branch

395 Wellington Street
Ottawa ON K1A 0N4
Canada

Bibliothèque et
Archives Canada

Direction du
Patrimoine de l'édition

395, rue Wellington
Ottawa ON K1A 0N4
Canada

*Your file Votre référence*
*ISBN: 978-0-494-47187-6*
*Our file Notre référence*
*ISBN: 978-0-494-47187-6*

NOTICE:
The author has granted a non-exclusive license allowing Library and Archives Canada to reproduce, publish, archive, preserve, conserve, communicate to the public by telecommunication or on the Internet, loan, distribute and sell theses worldwide, for commercial or non-commercial purposes, in microform, paper, electronic and/or any other formats.

The author retains copyright ownership and moral rights in this thesis. Neither the thesis nor substantial extracts from it may be printed or otherwise reproduced without the author's permission.

AVIS:
L'auteur a accordé une licence non exclusive permettant à la Bibliothèque et Archives Canada de reproduire, publier, archiver, sauvegarder, conserver, transmettre au public par télécommunication ou par l'Internet, prêter, distribuer et vendre des thèses partout dans le monde, à des fins commerciales ou autres, sur support microforme, papier, électronique et/ou autres formats.

L'auteur conserve la propriété du droit d'auteur et des droits moraux qui protège cette thèse. Ni la thèse ni des extraits substantiels de celle-ci ne doivent être imprimés ou autrement reproduits sans son autorisation.

---

In compliance with the Canadian Privacy Act some supporting forms may have been removed from this thesis.

While these forms may be included in the document page count, their removal does not represent any loss of content from the thesis.

Conformément à la loi canadienne sur la protection de la vie privée, quelques formulaires secondaires ont été enlevés de cette thèse.

Bien que ces formulaires aient inclus dans la pagination, il n'y aura aucun contenu manquant.

Canada

## Abstract

A Canadian print media analysis and random-digit dialed telephone survey was conducted to examine how the general public perceived the risk of Bovine Spongiform Encephalopathy (BSE) or "Mad Cow Disease." The results confirmed that public perspectives of BSE mirrored its quantifiable economic and health outcomes and how the disease was portrayed in the media. The majority of the 1,207 Albertans surveyed agreed that BSE was an economic risk, especially to cattle producers. Health risks were of little concern, especially in comparison to risks such as Severe Acute Respiratory Syndrome and the BSE crisis in Britain. However, on average the risk of BSE was perceived as more dangerous if a domestically acquired case of variant Creutzfeldt - Jakob Disease (vCJD) should occur. The premises for these connected results include a trust in government fostered by the media, a history and pride of beef production in Alberta, and how the risk was anchored.

## Table of Contents


**Chapter One: Introduction** ..... 1
Research Purpose and Objectives ..... 2
Theoretical Guidance ..... 4
Significance and Contributions of the Research ..... 8
Limitations of the Research ..... 10
References ..... 12

**Chapter Two: Paper #1 (Media Analysis)** ..... 16
"Canadian Media Representations of BSE and vCJD"
(Target Journal – *Journal of Toxicology and Environmental Health* (submitted))
Background ..... 18
*Theoretical Background* ..... *18*
*BSE in Canada* ..... *20*
*Media Representations of BSE in Britain* ..... *22*
Methods ..... 23
Results ..... 27
*Number of News Stories* ..... *27*
*Framing* ..... *28*
*Anchoring* ..... *31*
Discussion ..... 33
Conclusion ..... 35
References ..... 36

**Chapter Three: Paper #2 (Telephone Survey)** ..... 41
"Public Risk Perspectives of Mad Cow Disease"
(Target Journal – *Risk Analysis*)
Background ..... 44
*BSE in Canada* ..... *44*
*Theoretical Background* ..... *47*
Methodology ..... 48
Results ..... 52
*Risk Perceptions* ..... *52*
*Overall Risk of Mad Cow Disease* ..... *55*
*Risk Comparisons* ..... *56*
Discussion ..... 58
Conclusion ..... 63
References ..... 64

**Chapter Four: Conclusions** ..... 68
Summary of Findings ..... 69
Future Areas for Research ..... 71
Next Steps ..... 72

Concluding Remarks ..... 74
References ..... 74

**Appendix A** ..... 77
**Appendix B** ..... 87
**Appendix C** ..... 94

## List of Tables

Table 2-1. Number of articles for the first 10 days after 20 May 2003 in the newspapers (from 20 May 2003 to 29 May 2003).....28

## List of Figures

Figure 2-1 Number of articles for first 10 days after each confirmed event.....28
Figure 2-2 Themes of articles for all newspapers.....29
Figure 2-3 Economy sub-categories (total main and mention)..... 30
Figure 2-4 Percentage of articles with anchoring references by newspaper..... 33
Figure 3-1 Illustration of objectives: Understanding the relationship between the quantifiable economic and health outcomes, the general public's perspectives and the media's portrayal of BSE..... 43
Figure 3-2 Risk of BSE in terms of impact on economy, beef industry and health..... 53
Figure 3-3 Overall risk of Mad Cow Disease in Canada.....55
Figure 3-4 Overall risk change if a case of vCJD was confirmed in Canada ..... 56
Figure 3-5 Overall risk comparisons of BSE to SARS and the British BSE event..... 57
Figure 3-6 Illustration of results: Mirror relationship between the quantifiable economic and health outcomes, the general public's perspectives (mental models) and the media's portrayal of BSE.....59

## Chapter One: Introduction

'Risk' has become a defining concept in public and political debates, and mass media is seen as playing a key role in generating public concern about particular threats (Goodell, 1987). Bovine Spongiform Encephalopathy (BSE), also known as 'Mad Cow Disease' can be classified as one of these threats. As a result, there have been numerous studies on how media portrayed the risks of this disease in Britain (see Dornbusch, 1998; Brooks, 1999; Kitzinger and Reilly, 1997; Miller, 1999 and Washer, 2005). To date there has been little research on how the Canadian media portrayed the events or how media may have shaped subsequent perceptions of the risk.

In 1993, a single case of BSE was discovered in a cow imported from Great Britain. This event generated little public concern because the problem was seen to have originated elsewhere. This perspective changed when a case involving a Canadian born cow was discovered in northern Alberta in May 2003. This single Canadian case of BSE generated a considerable amount of attention and what was once perceived as a British problem now affected Canada. Since this time, 11 further confirmed cases of BSE have been found in Canada: January 2005; January, April, July (2), August 2006; February, May, December 2007; February and July 2008.

The economic effects were devastating for the approximately 90,000 Canadian beef producers who reported an estimated $11 million per day loss during the resulting export ban of Canadian beef. Not only did the finding of BSE in Canada have major impacts on the cattle industry, it also impacted other major industries, such as processing plants, trucking corporations, tourism, as well as fast food establishments and restaurant dining. As stated by Leiss and Nicol (2007) BSE had huge consequences in Canada, but

not because of issues linked to food safety. Instead, these issues stemmed from an export ban of beef resulting in an economic crisis.

The general public's perspectives of risk events are of considerable importance in the public and policy making arena (Dowler et al., 2006). This is especially true of food risks. A number of studies have shown that even though modern food systems have become increasingly safe there is a growing concern about food related risks (see Caplan, 2000; Frewer & Shepard, 1998). Risk managers (including those involved with the events associated with the discovery of BSE) are expected to deal with social, economic, ethical, and political issues (National Research Council, 1996). Understanding public perspectives of risk is generally acknowledged to be crucial to developing successful risk management strategies (U.S. Presidential/ Congressional Commission on Risk Assessment and Risk Management, 1997; U.S. National Research Council, 1996). It has been argued that failures in the accurate communication of risks were the main cause of the mismanagement of the BSE events in Canada (Leiss and Nicol, 2007). Therefore, it is essential to understand the activities surrounding the events of BSE to better understand how the risks were portrayed and understood. This will assist in better preparing for communications around possible similar risk events in the future.

## Research Purpose and Objectives

The media is generally thought to influence public views and judgments on risk issues (Wanta et al., 2004; McCombs & Shaw, 1972). However, few empirical studies have been conducted to determine if this assumption is accurate. The purpose of this research is to better understand how media representation, public understandings and quantifiable outcomes of BSE and vCJD (the economic impacts and lack of human health

impacts) have affected the perceived risk of the diseases. Furthermore, the media representations will be compared to known literature on the United Kingdom (UK) event to understand how the Canadian crisis differed from the British crisis. This is important to understand as there is evidence from Britain that news coverage of the BSE crisis resulted in a significant reduction in Britain's beef consumption (Caplan, 2000), whereas in Canada the consumption of beef did not decrease, despite intense media coverage (Yanning et al., 2004).

The overall objectives of the study include: 1) detail how the Canadian print media portrayed Mad Cow Disease and the risks involved with the disease; 2) describe how media events in Canada differed/compared to the media coverage in the United Kingdom; 3) explore how the general public perceived the nature of the risk; and 4) determine if public perspectives mirrored the media portrayal and/or the quantifiable economic and health outcomes of BSE in Alberta.

In Chapter Two: Paper #1 "Canadian Media Representations of BSE and vCJD" print media representations of BSE and vCJD are explored through an in-depth content analysis. The findings illustrate how Mad Cow Disease and the attendant risks were portrayed by the media. Media events in Canada are compared to existing media analyses of BSE events in the United Kingdom to discern what the major differences and similarities were in reporting (see Brooks, 1999; Dornbusch, 1998; Miller, 1999; Washer, 2005).

The second part of the study is described in Chapter Three: Paper #2 "Public Perceptions of Mad Cow Disease." In this study, the relationship between media representations, public understandings and quantifiable economic and health outcomes of

the risk are explored. Results from a random-digit dialed telephone survey of Albertans during Spring 2007 are utilized to examine the general public's views and to better understand the perceived nature, impact and consequences of BSE and vCJD in Canada. Questions were compiled by the authors of Paper 2 and presented as part of the Alberta Survey - an annual provincial telephone survey administered by the Department of Sociology, University of Alberta, through its research facility, the Population Research Laboratory. The goal is to understand if public opinions mirror what was reported in the media and the quantifiable economic and health outcomes of media coverage-- it provides a means of validating the assumptions of the role of the media in this risk event.

## Theoretical Guidance

The underlying concept of the research is directed by risk and risk communication theory, as well as theory on media analysis and psychological understanding of risk. This research uses risk as the expression that gives meaning to things, forces or circumstances that pose a real or perceived potential danger to people and what they value (National Research Council, 1996). There are commonalities of how risk analysts view the factors affecting the technical assessment of risk. The National Research Council (1983) organizes these factors into four areas comprising of hazard identification, exposure assessment, dose response assessment and risk characterization.

However, risk assessment is only one input into decisions on how to best manage the risk. Risk management has become increasingly politicized and contentious as risks become more multi-faceted and complex. Slovic (1993) states that risk-perception research provides a new perspective on how people view risk, and demonstrates that the

inconsistencies among different viewpoints are not due to public ignorance or rationality. Five ideas are brought forth to help understand public perceptions of risk. These ideas include the degree of control over the risk situation, whether the risk is acquired voluntarily or involuntarily, the extent of trust the individual has in institutions, the extent to which a risk is familiar or not familiar, and the idea of fairness (Slovic, 1991). Sandman (2004) suggests further factors that affect public perceptions of risk. These factors involve how dreaded the outcome is, whether the risk is diffused or focused in time and space, how memorable the risk is, the extent of moral relevancy and whether the risk is natural or industrial. Risk encompasses both objective and subjective qualities, where risk judgments are considered to be a by-product of social, cultural and psychological influences (McComas, 2006).

Clearly, since these different factors affect people's perceptions, the task of defining risk can be very complex, especially when parties disagree on the definitions. Theories in neuroscience and cognitive psychology demonstrate that risk can be understood in two ways (Slovic, 2004). The first involves the "analytic system" based strictly on a technical estimate of the probability and magnitude of a negative outcome. The second method people use to understand risk involves the "experiential system." The experiential system includes social filters or individual preferences that need not be dependent on a technical calculation (Slovic, 2004). Slovic (2007) further demonstrates the importance of affect in guiding decisions involving risk, in other words meaning the amount of "goodness" or "badness" involved in guiding decisions around risk. He terms this the "affect heuristic" which involves a state of feeling demarking either a positive or negative sentiment to the risk. Research indicates that the two systems do not work

independently; rather they rely on each other. This demonstrates that values of both systems must be taken into account when developing effective risk management strategies.

Risk communication can be explained as the exchange of information among individuals, groups and institutions related to the assessment, characterization and management of risks (McComas, 2006). Furthermore, the National Research Council (1989) states that risk communication is successful only when it "raises the level of understanding of relevant issues or actions for those involved and satisfies them that they are adequately informed within the limits of available knowledge" (p. 2). This type of communication values the importance of dialogue, conflict resolution, consensus building and relationship development among stakeholders involved with the risk (Heath et al. 2002). Kasperson et al. (1996) states that risk communicators, especially the mass media, are major stations of risk attention and amplification. Therefore, it is especially important to recognize the extent of media coverage, the volume of information, the ways in which a risk is framed and the resultant interpretations of a message.

When discussing the interplay between risk communication theory and media theory, it is necessary to discuss "agenda-setting" (McCombs, 1972). Agenda setting theorists contend that the media creates concern for salient issues based on two factors: (1) that the press does not necessarily reflect reality, instead it shapes and defines it; and (2) that the media focus on only some issues, leading the public to believe that these issues are more important than others. Related to this theory is the "gatekeeper" concept (see Lewin, 1951; Shoemaker, 1996). Gatekeeping is the process by which messages are reduced to the few that are offered by the media (Shoemaker, 1996). This involves

agents, who filter the information provided to the general public by allowing only certain ideas and issues to surface in the media.

In the first paper, "Canadian Media Representations of BSE and vCJD" both social representations theory (Moscovici, 2001) and framing effects theory (Carragee and Roefs, 2004; Entman, 1993) are used to study individual and group 'common sense' knowledge and what processes shape the contents of people's thoughts. Although media analysis is not an exact replacement for interactional research with the public, examining how mass media represents risk events has been a technique used by researchers to gauge how the general public may understand the issues (Dunwoody 1992; Friedman et al. 1999; Driedger 2007). When other research methods are not available, media analysis can be a useful tool to understand how the public may view risks events, by better understanding what issues are salient to the public through news media (Driedger, 2007; Driedger et al., submitted).

Social representations theory and framing effects theory were specifically chosen because they were also used in some UK studies that will be presented in this research, thereby providing a valuable comparison to the Canadian event. The theory of social representations is used to describe how the public conceptualizes the risks portrayed by the mass media. More specifically the past events and metaphors used to explain BSE and vCJD are explored. The underlying concept of this theory is that these representations operate to familiarize the new risk and therefore make it more comprehensible. The second major guiding theory is framing effects. Frames involve the way media organize and present the events, and can be used to reinforce dominant issues and ideas. When information becomes highlighted in news reporting, it elevates the

salience of risk events, making them more memorable or noticeable to the reader (McQuail, 2002).

In the second paper, "Public Risk Perspectives of Mad Cow Disease" mental models is the main theory employed. This section of the research uses this concept to understand the internal representations in the public's thinking processes (Atman et al., 1994; Morgan et al., 2001). This improves how we understand the representations of reality that people use to understand a specific phenomena, in this case BSE in Canada. It is generally thought that risk managers must understand how stakeholders perceive risk events, in order to effectively communicate about the risk itself (Atman et al., 1993). Mental models not only involve matters of individual cognition, but also correspond to worldviews that involve deeply held beliefs (Dake, 1991). Use of this theory increases understanding of how people perceived the attendant risks of BSE and vCJD and if their mental models reflect media content, providing a tool to understand if there was a corresponding effect between their mental models and the framing and representations of the newsprint media and quantifiable economic and health effects of the disease. This second paper employs the mental models method of determining how widespread or generalizable the risk perspectives on BSE and vCJD are in the general population of Alberta.

**Significance and Contributions of the Research**

This research project will benefit the understanding of both public perspectives on Mad Cow Disease and appropriate risk communication and risk management actions to deal with events of this nature. The finding of BSE has caused chaos in the Canadian

economy, especially within the agricultural industry. Statistics Canada has reported that beef producers reported an estimated $6.3 billion loss from the first finding alone (Mitura & Pietro, 2004). Mad Cow Disease has been discovered in many countries, most notably in Britain. However, unlike BSE in Britain, a confirmed Canadian case BSE has not yet resulted in major health concerns for the general public. The conclusions of this study will serve to better understand the perceptions of Canadians on the risk of BSE and vCJD, and help bring understanding of how media representations and resulting public perspectives of the risk differ from reactions documented in the United Kingdom and Europe. This research is critical as the findings of BSE in Britain and Canada resulted in two different outcomes. In Canada the consumption of beef increased (Yanning et al., 2004), whereas in Britain it decreased considerably (40% in 1996) (Caplan, 2000). In Canada it was hypothesized that economic issues were most salient in the newsprint media –in Britain research has shown that health concerns were most prominent in the media (Washer, 2005; Caplan, 2000). It is crucial to understand how the public views the risks as cases of BSE continue to be found in Canada. Through a media content analysis we may glean an understanding of how representations of BSE and vCJD may have resulted in different consumption behaviors in the UK and Canada.

Second, the investigation is taken a step further by looking at the relationship between the public's understanding of BSE, the media's reporting of the event and the quantifiable economic and health outcomes of the disease. Ultimately, we can better understand how media framed the risks of BSE and how it related to people's perceived risk of the event. Commonly, studies in risk communication assume that media content reflects the quantifiable outcomes of a risk and can be used as a substitution for

understanding public's perceptions; however, few studies have used an empirical analysis to validate this assumption. This study utilizes a survey of public opinion to satisfy this information deficiency.

**Limitations of the Research**

This research was limited by a number of factors. The media analysis was limited by the number of newspapers sampled. Four newspapers were chosen for the analysis; two national and two regional. Considering the amount of newspapers that are in the country, this is a relatively small number. Although this restriction was necessary because of time and money constraints, the four newspapers analyzed were representative of different types of newspapers and news reporting, and that the effect of this limitation on the research was minimal.

Another restrictive factor was the time frame of the sampling. A sample of the "first 10 days" after the major occurrence was chosen. This yielded a large number of articles but did not include sampling periods between the cases of BSE in Canada. The representativeness of this time period has, however, been demonstrated in the forthcoming paper by Driedger et al. (submitted) "Do the first 10 days equal a year?: Comparing two Canadian public health risk events using the national media".

The geographic location focused on during the study may have also confined the research. Alberta was chosen because it has such a high percentage of people working in the beef industry and was the location of most of the BSE cases (Canadian Food Inspection Agency, 2005). However, a sampling of further locations may have enriched the data further.

The Alberta-wide telephone survey was also limited by a few factors, including the amount of time that had elapsed since the first case of BSE in Canada. It would have been optimal to have survey data that was collected closer to May 2003 when recollections of the event were more recent. The perspectives of BSE and vCJD could have been affected by the number of additional BSE cases that subsequently occurred. Also questions such as "Did your trust in the federal government change" could have been affected by variables other than BSE.

Another factor that limited the research was that only Albertans were used in this survey. This matched the focus of the media analysis; however, the data would have been enhanced by seeing the differences in opinions of the other provinces. Due to the fact that we used the Alberta Population Research Lab to administer our questions in their annual survey, we were further limited by their definition of rural and urban participants. In total there were 400 surveyed from Edmonton, 400 from Calgary and 400 from other Alberta (representing the relative populations of each of these three areas). The latter number included both rural and smaller urban populations and therefore it was not discernable who were from farming communities. Also the use of a random digit dialing surveying method precludes sampling people without telephones or who choose to use only cell phones.

Finally, the numbers of survey questions were also limited. Additional questions (such as "How often did you follow the reports of BSE in the news?") would have provided further insights into the relationship between media representations and public understanding However, once again, the number of questions was limited by the resources available to conduct this study.

**References**

Atman, C.J., Bostrom, A., Fischhoff, B. & Granger, M. (1994). Designing risk communications: Completing and correcting mental models of hazardous processes. *Risk Analysis*, 14(5), 779-788.

Brooks, R. (1999). Newspapers and national identity: The BSE/CJD crisis and the British press. *Media, Culture & Society*, 21, 247-263.

Canadian Food Inspection Agency (March 2005) Government of Canada technical overview of BSE in Canada. Retrieved April 30, 2008, from http://www.inspection.gc.ca/english/anima/heasan/disemala/bseesb/200503canadae.shtml

Caplan, P. (2000). Eating British beef with confidence: A consideration of consumers' responses to BSE in Britain. In *Risk revisited*. Ann Arbor, MI: University of Michigan Press.

Dornbusch, D. (1998). An analysis of media coverage of the BSE crisis in Britain. In S.C. Ratzan, (Ed.), *The Mad Cow crisis*. New York: New York University Press.

Driedger, S. M. (2007). Risk and the media: A comparison of print and televised news stories of a Canadian drinking water risk event. *Risk Analysis*, 27(3), 775-786.

Dunwoody, S. (1992). The media and public perceptions of risk: How journalists frame risk stories. In D.W. Bromley & K. Sergerson (Eds.), *The social response to environmental risk: Policy formulation in an age of uncertainty* (pp. 75-100). Boston: Kluwer Academic Publishers.

Entman, R.M. (1993). Framing: Toward a clarification of a fractured paradigm. *Journal of Communication*, 43, 115-132.

Frewer, L. J., & Shepherd, R. (1998). Consumer perceptions of modern food biotechnology. In S. Roller and S. Harlander (Eds). *Genetic engineering for the food industry: A strategy for food quality improvement,* New York: Blackie Academic,

Fiske, S. T. & Taylor, S.E. (1991). *Social cognition*. New York: McGraw Hill.

Friedman, S.M., Dunwoody, S & Rogers, C.L. (Eds.). (1999). *Communicating uncertainty: Media coverage of new and controversial science*. Mahwah, NJ: Lawrence Erlbaum Associates.

Goodel, R. (1987). The role of mass media in scientific controversy. In T. Engelhardt & A. Caplan (Eds.), *Scientific controversies: Case studies in the resolution and closure of disputes in science and technology.* Cambridge: Cambridge University Press.

Granger, M., Fischhoff, B., Bostrom, A., & Atman, C.J. (2001). *Risk communication: A mental models approach*. Cambridge: Cambridge University Press.

Kim, S.-H. & Willis, L.A. (2007). Talking about obesity: News framing of who is responsible for causing and fixing the problem. *Journal of Health Communication*, 12, 359-376.

Leiss, W. & Nicol, A.N. (2006). A tale of two food risks: BSE and farmed salmon in Canada. *Journal of Risk Research*, 9(8), 891-910.

Lewin, K. (1951). Field theory of social science: Selected theoretical papers. *The ANNALS of the American Academy of Political and Social Scienc*e, 276, 146-147.

McCombs, M. & Shaw, D.L. (1972). The agenda-setting function of mass media. *The Public Opinion Quarterly*, 36(2), 176-187.

McQuail, D. (Ed.). (2002). *McQuail's reader in mass communication theory*. London: Sage Publications.

Moscovici, S. (2001). *Social representations*. New York: New York University Press.

National Research Council. (1983). *Risk assessment in the federal government: Managing the process*. Washington, DC: National Academy Press.

National Research Council. (1989). *Improving risk communication: Commission on behavioral and social sciences and education and commission on physical sciences, mathematics, and resources.* Washington, DC: National Academy Press.

Sandman, P.M. (2004). Hazard versus outrage in the public perception of risk. In: V.T. Covello, D.B. McCallum and M.T. Pavlova (eds.) *Effective risk communication: The role and responsibility of government and nongovernmental organizations.* New York: Plenum Publishing Corporation.

Shoemaker, P.J. (1996). Media gatekeeping. In M.B. Salwen & D.W. Stacks (Eds.), *An integrated approach to communication theory and research.* Mahwah, NJ: Lawrence Erlbaum Associates.

Slovic, P. (1993). Perceived risk, trust, and democracy. *Risk Analysis,* 13(6), 675-682.

Slovic, P., Finucane, M.L., Peters, E. & MacGregor, D.G. (2004). Risk as analysis and risk as feelings: Some thoughts about affect, reason, risk, and rationality. *Risk Analysis,* 24(2), 311-322.

Slovic, P., Finucane, M.L., Peters, E. & MacGregor, D.G. (2007). The affect heuristic. *European Journal of Operational Research*, 17(3), 1333-1352.

U.S. Presidential/Congressional Commission on Risk Assessment and Risk Management. (1997). *Framework for environmental health risk management.* Final Report, Volumes 1 and 2. Washington, D.C.

U.S. National Research Council. (1996). *Understanding risk: Informing decisions in a democratic society.* Washington, D.C: National Academy Press. p.264.

Wanta, W., Golan, G., & Lee, C. (2004). Agenda setting and international news: Media influence on public perceptions of foreign nations. *Journalism and Mass Communication Quarterly,* 81(2), 364-377.

McCombs, M., & Shaw, D. (1972). The agenda-setting function of mass media. Public *Opinion Quarterly,* 36, 176-187.

Washer, P. (2005). Representations of Mad Cow Disease. *Social Science & Medicine.* 62, 457-466.

Yanning, P., MacCann-Hiltz, D., & Goddard, E. (June 2004). *Consumer demand for meat in Alberta Canada: Impact of BSE.* Paper presented for the 2004 meeting of the American Agricultural Economics Association, Denver, Co.

## Chapter Two: Paper #1 (Media Analysis)

## "Canadian Media Representations of BSE and vCJD"

(Target Journal – *Journal of Toxicology and Environmental Health* (submitted))

'Risk' has become a defining concept in public and political debates, and mass media is seen as playing a key role in generating public concern about particular threats (Goodel, 1987). Bovine Spongiform Encephalopathy (BSE), also known as 'Mad Cow Disease' typifies a special class of socially amplified hazards that trigger intense media coverage and strong public concerns, as well as high institutional attention (Kasperson, 2001). Studies have shown that media can markedly influence public belief and behavior about risk (Miller, 1999). Therefore, a media content analysis can offer beneficial insights into the prevailing public response to the risk. This paper describes an analysis of print media undertaken to understand the portrayal of BSE and *variant Creutzfeldt - Jakob disease* (vCJD) in Canada and how the media framing of the risks may have affected public perspectives.

In our 'risk society' a range of potential risks and uncertainties is associated with new technologies and new diseases such as BSE (Cummins et al., 2002). Although BSE initially was determined to be a British problem, many countries now deal with BSE and vCJD. As a result, there have been numerous studies on how media portrayed the risks of this disease in various countries (see Brooks, 1999; Dornbusch, 1998; Kitzinger and Reilly, 1997; Miller, 1999; Payne, 1998; Raude et al., 2004 and Washer, 2005). There has also been considerable subsequent scientific research in regards to BSE in Canada; however, to date there has been little research of how the Canadian media portrayed the events and subsequent perceptions of the risk. This study aims to better understand how the events surrounding BSE were depicted by the Canadian newsprint media.

The Canadian analysis was then compared against print media analyses conducted of the BSE events in the UK, particularly the research completed by Washer (2005). The

comparison was possible because the methods used in the studies were relatively similar, as both used specific limited time periods and framing categories. Both studies utilized similar theoretical frameworks based on the principles of social representations theory and framing. It is important to understand how media representations compared/differed in the two countries as the outcomes were significantly different. There is evidence from Britain that news coverage of the BSE crisis resulted in a significant reduction in Britain's beef consumption (Caplan, 2000), which dropped by 28% in 1990 and 40% in 1996 (Miller, 1999). In Canada, there was also intense media coverage, yet the consumption of beef did not decrease (Yanning et al., 2004). As a result of the differences in beef consumption during the BSE crisis, we anticipate that there was a difference in how the newsprint media framed the crisis. More specifically, we hypothesize that in Canada the economic concerns were emphasized to a greater extent than the actual health consequences of vCJD. Comparing the Canadian media framing to the British media framing will help bring understanding of how media representations and resulting public perspectives of the risk differed in the two countries.

## Background

### Theoretical Background

While there are many sources of media, newspapers in particular play a key role in how a region of people understand risks and events as newspaper reading constitutes the simultaneous consumption of the same newspapers by a group of individuals defined within finite boundaries (Brooks, 1999). Many social amplification and attenuation of risk framework studies have stressed the effects of mass media on public attitudes and

behaviors associated with risks (as cited by Flynn in Raude et al., 2004). A number of researchers have utilized print media analysis to better understand how the general public comprehends a risk issue or event (Driedger, 2007; Dunwoody, 1992; Friedman et al., 1999; Slovic, 2000; Washer, 2005).

Newig (2004) states that mass media is an important factor in amplifying public attention, as agents anticipate what people will be interested in and in turn facilitate communication and information about the risks. The media thus act as a catalyst and increase the speed of news dissemination. Often media are shown to focus on scientific uncertainty and generate public concern about particular threats. Clearly media coverage of risk is selective given that reporting does not parallel the incidence of risk events (Kitzinger and Reilly, 1997). Conversely, media reporting may emphasize 'risk' instead of offering reassurance (Kitzinger and Reilly, 1997).

Both social representations theory (Moscovici, 2001) and framing effects theory (Carragee and Roefs, 2004; Entman, 1993) are used in this study to examine how the media might shape individual and group 'common sense' knowledge, and what processes shape the contents of people's thoughts. Social representations theory is used to understand how media explained the risks of Mad Cow Disease and how the public may have conceptualized the risks. Commonly, media will attempt to compare a new threat with past events and metaphors. This operates to familiarize the new risk and therefore make it more comprehensible. Washer (2005) found that the British media commonly used "anchors" to tie Mad Cow Disease to a known disease or sickness, and that these anchors changed over the course of events. Anchors serve to make events and risks more

common as the unfamiliar is compared to the familiar and therefore made less threatening (Moscovici, 1984).

Frames refer to the way media organize and present the events and issues they cover, and the way audiences interpret and give meaning to the information they are provided (Dimitrova and Strömbäck, 2005). Media framing may be used to reinforce dominant ideologies. This reinforcement draws attention to some aspects of reality and away from others (Fleras, 2003). Frames are evident by the presence or absence of specific keywords, phrases, sentences and stereotyped images that provide reinforcing clusters of facts or judgments (McQuail, 2002). Through frames, some information about an item is highlighted, hence elevating these items in salience. This makes the information more noticeable, meaningful, or memorable to audiences (McQuail, 2002) and also helps make a complex issue easier to understand (Kim and Willis, 2007). This salience increases the probability that readers will perceive the information, discern meaning and store it to memory (Fiske and Taylor, 1991).

**BSE in Canada**

The first Canadian case of BSE was confirmed in northern Alberta, Canada on May 20, 2003. The sick cow that was sent to the slaughter house in early January was inspected and removed so that it would not end up as food for humans or other animals. The carcass was then sent to a plant to be rendered into oils and the head was kept for testing. Four months later, the cow was identified as having BSE. Up until this date, Canada had been virtually BSE free, except for a single case of BSE discovered in 1993 in a cow imported from Great Britain.

The beef cattle sector is very important to Canada's agricultural industry, as well as to the overall economy (Mitura and Pietro, 2004). Using Statistics Canada's input-output model, it is estimated that for each $100 million in exports by the cattle sector, $80 million is added to the national gross domestic product, $228 million is generated in total output, $41 million is added to labor income and approximately 3,000 jobs are created in Canada (Mitura and Pietro, 2004). After the discovery of the Canadian case of BSE, over 40 countries (including the U.S., South Korea, Japan and Australia) immediately imposed restrictions on the import of live ruminant animals, meat products and animal by-products from Canada. The effects of the May 2003 case of BSE were devastating for the approximately 90,000 Canadian beef producers who reported an estimated $6.3 billion loss by early 2004 (Mitura and Pietro, 2004). The ban on Canadian beef was prolonged after the finding of a case of BSE in the United States on December 23, 2004. The cow, discovered in Washington State, had originated in Canada. Since this case, 11 further confirmed cases of BSE have been found in Canada, occurring in: January 2005: January, April, July (2), and August 2006; February, May and December 2007; and February and July 2008.

The human form of the disease, vCJD, has been confirmed in many countries. The highest number of cases has been in Britain, which accounts for over 95% of the cases worldwide. One Canadian was diagnosed with vCJD in April 2002. However, this person was found to have acquired the disease by eating British beef while overseas. To date, there has never been a confirmed case of anyone developing vCJD from eating Canadian beef.

**Media Representations of BSE in Britain**

Many studies have focused on Britain, perhaps because over 95% of all BSE cases have occurred in the UK. During 2002 alone, there were more than 117 concurrent cases of vCJD (Raude et al., 2004). Consequently there have been numerous studies of how the media portrayed the risks (Brooks, 1999; Dornbusch, 1998; Kitzinger and Reilly, 1997; Miller, 1999; Raude et al., 2004; Washer, 2005). It was found that media reporting of BSE was sporadic. The first peak of reporting occurred in May 1990 when a cat was diagnosed with spongiform encephalopathy, indicating cross-species jumping. However, interest rapidly declined towards the end of that year, and the next major peak did not occur until a further event in 1996 (Kitzinger and Reilly, 1997; Miller, 1999).

At first the Ministry of Agriculture, Fisheries and Food (MAFF) stated that there was no risk to humans and beef was safe: this position did not change until March 1996 (Kitzinger and Reilly, 1997). After the announcement of the probable link between BSE and vCJD, the potential implications for human health were obviously relevant to the general public (Kitzinger and Reilly, 1997; Miller, 1999). The study of *The Financial Times* coverage indicates how inaccuracies in British press reports heightened public fear in the early days of the crisis (Dornbusch, 1998). Initially, four of the five tabloid newspapers examined by Brook (1999) represented the crisis first as a health crisis and then also as an industrial scare; it was only *The Sun* that argued that the economic effects were more of a concern. As the crisis developed, all five newspapers began to focus on the threat posed to the British beef industry from the European ban, at the expense of food health aspects (Brooks, 1999). MAFF lost considerable credibility with the public in having to react to inaccurate news articles rather than taking the lead in providing

accurate information, and possibly being able to apply more appropriate proactive measures. In fact, one-third of *Financial Times* articles between March and September 1996 commented on the governments' incompetence in handling the BSE crisis. A media analysis of *The Times* indicates that:

> the media filled a void and became the primary health disseminator, drawing conclusions regarding health risks; (2) the media endangered fear over BSE; (3) the media misinterpreted scientific data about BSE; and (4) the Government was portrayed as unreliable and incompetent in dealing with the BSE crisis. (Dornbusch 1998, p. 145)

By withholding information, the British government tried to protect the public from unnecessary fear: instead, it created a crisis which fostered even greater fear (Dornbusch, 1998).

## Methods

Newspaper articles were examined following the 'first 10 days' of the initial discovery of a cow with BSE in Alberta, Canada on May 20, 2003. This time period is based on the premise that initial stories establish a common heuristic or 'trigger' that the public may use to reinforce and make sense of subsequent reporting of the same issue over time and multiple occurrences (Frewer et al., 1993; Frewer, 1999). Through using this method we assume that unless there is another major development in the risk event, journalists will continue to use these initial frames to describe future news stories. This method has been tested by comparing the 'first 10 days' of news reporting of BSE and another Canadian risk event (*E. coli* drinking water contamination in Walkerton, Ontario reported May 24, 2000) to a full year of reporting. The findings show that this is a valid method to sample newsprint media (Driedger et al., submitted). Secondly, the 'first 10

days' following subsequent confirmed Canadian cases were analyzed to determine if coverage changed in these later media articles.

The newspapers that were included in this study are: (1) two leading national newspapers, *The Globe and Mail* and *The National Post*; (2) one regional Alberta newspaper, *The Edmonton Journal* and (3) one local Alberta newspaper *The Lethbridge Herald*. *The Globe and Mail* and *The National Post* were chosen because they are available to the entire Canadian population. As it is believed that BSE was largely an Albertan concern, *The Edmonton Journal* was chosen as the major regional paper and because it was closest to the discovery of the case of BSE. *The Lethbridge Herald* was selected as the city of Lethbridge (in southern Alberta) has a large cattle industry.

The articles were selected by using broad keywords (BSE, Mad Cow and vCJD) and were collected from online sources utilizing: (1) Canadian Newsstand for *The Globe and Mail*, *The National Post*, *The Edmonton Journal* and (2) Virtual News Library for *The Lethbridge Herald*. The articles then went through a selection process to determine if they should be included in the analysis. The media analysis utilized by this study was modeled after research by Driedger (2007). Articles were included if they addressed one of four questions:

1. Is the story reflective of the BSE crisis? (If yes, keep story).
2. Does the article use BSE as a comparable event to another unrelated event, or compares BSE to the possible cause of another crisis? (If yes, keep story).
3. Is the story about plans or government responses to the BSE event in terms of changes in policy, funding procedures or other economic or health care policies? (If yes, keep story).

4. Does the story articulate the BSE crisis in another country? (If yes, keep story).

News articles that only mentioned BSE in cursory manner but were not the main focus of the story were eliminated. Also, letters to the editor were excluded as readers may differentiate these sources from regular editorials and news sections.

Collecting quantitative data about defined variables is one method used to determine the objective content of messages (McCormack, 1982, as cited in Altheide, 1996). This is further summarized as follows:

> Content analysis translates frequency of occurrence of certain symbols into summary judgments and comparisons of content of the discourse…whatever "means" will presumably take up space and/or time; hence, the greater that space and/or time, the greater the meaning's significance. (Starosta, 1994, as cited in Altheide, 1996, p. 15)

The categories consisted of a countable unit, allowing for measurement of the occurrence of categories. Initial *a priori* codes were developed through an extensive BSE literature review (Stemler, 2003). Since the comparison of British BSE media to Canadian BSE media was a key point in this study, categories were chosen to enable comparison between the two representations (See Brooks, 1999; Dornbusch, 1998; Miller, 1999; Washer, 2005). These four studies provided the fundamental categories used for the Canadian paper. While we cannot directly compare the research based on methods alone, the theories and outcomes of the research can be used to compare events in both countries. The articles were categorized by: 1) *health* (i.e., describing some aspect of the human physical well being or possible human safety concerns); 2) *government* (i.e., articles that discuss the government or governing members as well as mentions of specific actions or policies that the government is responsible for); 3) *blame* (i.e., someone or something is being assigned fault or responsibility); 4) *mistrust* (i.e., an

article that demonstrates a lack of confidence in a person, thing or idea); 5) *definitions* (i.e., defining or explaining a certain aspect of BSE); 6) *descriptions* (i.e., explaining what has happened or an account of something); 7) *control actions* (i.e., describing how the crisis will be controlled or describing how the events or disease is under control); 8) *economy* (i.e., the overall monetary/economic wellbeing of the country); and 9) *other* (i.e., does not fall into any of the above categories). As the economy category had a large proportion of articles, it was then sub-categorized by *trade* (i.e., where the article describes how BSE was affecting the exchange of goods between Canada and other countries); *plight of farmers* (i.e., where farmers and ranchers were described as having a hard time with BSE or farm related events); *affect other industry* (i.e., where focus was on how BSE was impacting other industries); or *the general economy* (i.e., how BSE affected the overall monetary wellbeing of the Canadian economy). The sampling unit (i.e., each news story) was analyzed in two ways. First if the sampling unit had multiple references to the same category, the content theme was counted only once per article. There could be multiple categories that exist in each sampling unit (e.g., blame and government). This constitutes the *mention* results described later. Secondly, a main category was chosen for each sampling unit. In this analysis only one category could exist in each article. This second analysis technique constitutes the *main* categories described in the results section.

Mirroring the method used by Driedger (2007) an inter-coder reliability test was preformed. The lead author and another coder independently categorized a selection of articles, achieving a 95% reliability rate. In addition, selections of story category recording units were rated independently by both the principal investigator and another

coder, achieving a 90% reliability rate. Both of these reliability rates meet the acceptable levels identified by Miles and Huberman (1994).

## Results

### Number of News Stories

The Canadian media analysis confirmed that the initial discovery of a cow with BSE in Canada on May 20, 2003 resulted in immense media coverage. During the first 10 day period after confirmation, there were 292 articles that contained the keywords BSE, Mad Cow and vCJD, and met the screening criteria for inclusion in this analysis.

The Canadian coverage was quite different than the British coverage. One main difference was that Canada's preliminary case was found in 1993 and, as a result of the previous British media coverage, Canadians already had an idea of what a BSE crisis might entail. Second, no one in Canada has died from domestically acquired vCJD. Therefore, it is not surprising that the news reporting in Britain was very different from that in Canada.

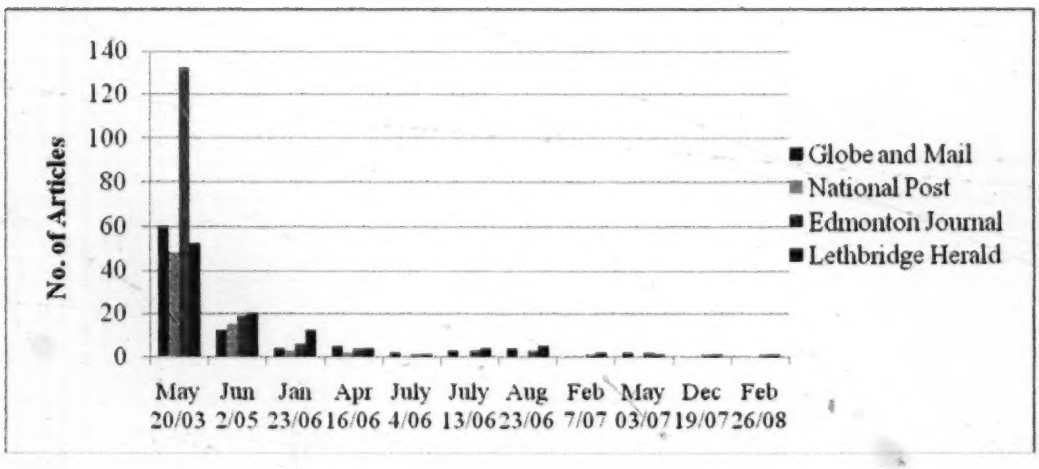
As Table 2-1 and Figure 2-1 depict, there was an exceptionally large number of articles for the first 10 days of media coverage after the May 20, 2003 confirmation. Each consecutive confirmed case of BSE had fewer articles until eventually newspapers would write only one short article per event, or, in the case of *The Globe and Mail*, no articles for the last three confirmed cases. Perhaps, as Newig (2004) suggests, after having spent much attention on an unresolved issue, citizens will gradually turn away from it because of decreasing marginal benefits.

**TABLE 2-1 Number of articles for the first 10 days after 20 May 2003 in the newspapers (from 20 May 2003 to 29 May 2003)**

| | Total | Sample [a] |
|---|---|---|
| Globe and Mail | 86 | 59 |
| National Post | 72 | 46 |
| Edmonton Journal | 170 | 134 |
| Lethbridge Herald | 64 | 53 |
| TOTAL | 392 | 292 |

[a] Letters to the editor or articles with only incidental mention were not used in sample

**FIGURE 2-1 Number of articles for first 10 days after each confirmed event**




**Framing**

Figure 2-2 shows the themes of articles, divided into "main" and "mention" categories. The "main category" depicts the theme that best describes the entire article; there can be only one main category theme for each article. Several categories could be

"mentioned" for each article; therefore, it is possible for these values to be greater than 100%. As depicted by the graph, the 'economy' category had by far the most mentions (main=39%). Figure 2-3 shows the sub categories of the economy frame. The 'general economy' category had the most mentions while 'plight of farmer' had the fewest. This could be because it was not until later in the BSE crisis that there were announcements of aid to farmers and ranchers.

**FIGURE 2-2 Themes of articles for all newspapers**

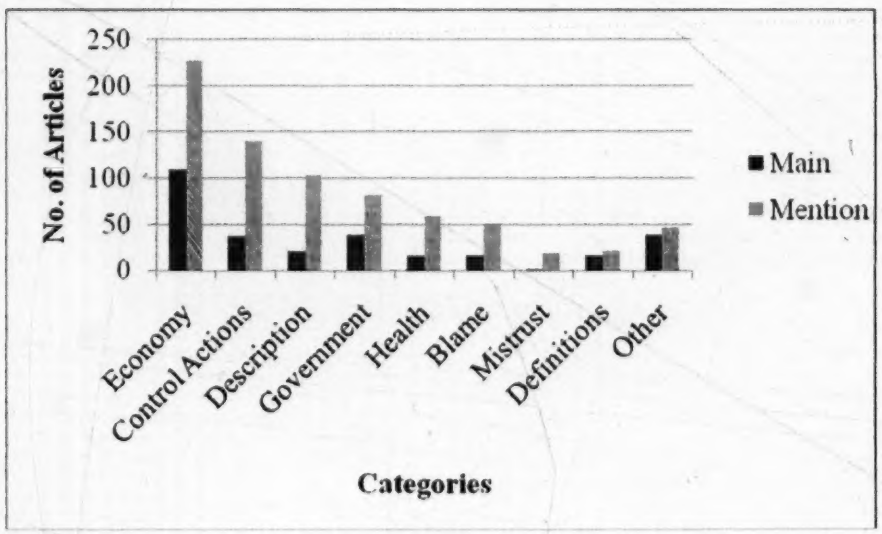
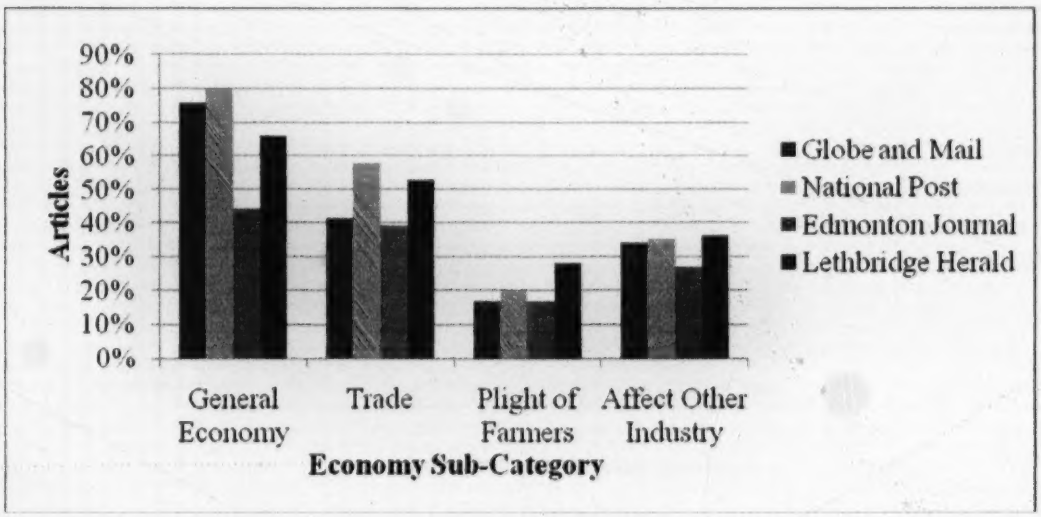


**FIGURE 2-3 Economy sub-categories (total main and mention)**




Another recurring theme was the 'control actions' category (main=12%). Most often, these were reassuring, positive messages that an event or crisis would be controlled. 'Descriptions' were also found throughout newspaper articles (main=9%), often consisting of a timeline, giving specific dates and associated events.

'Health concerns' were not discussed to the same extent as in the media of other countries (main=5%). Granted, the first few days after the announcement of BSE showed a high number of health articles, before the number eventually dropped. Articles on health often stated that there was a very small risk of contracting the illness, as exemplified in the following excerpt from a Globe and Mail Article:

> "But anyone who bothers to learn about mad-cow disease and Canada's safeguards against contamination won't change their eating habits," said Neil Cashman, an expert on mad-cow disease at the University of Toronto's Centre for Research on Neurodegenerative Disease. "These kinds of tiny risks are everywhere in the food system already," said Douglas Powell, scientific director of the Food Safety Network at the University of Guelph, "and

> illnesses caused by fruits and vegetables will likely remain more common than any problems from meat." (Smith, 2003, p. A1)

However, at other times, health articles exaggerated risk: "It is among the 'worst of the worst' diseases to afflict humankind, a horrible illness that destroys a person's memory, personality and ability to walk, talk and think." (Staples, 2003, p. A5)

Two other themes that ran throughout the articles were 'blame' and 'government.' 'Blame' occurred as a main theme only 14 times (main=5%) in the four newspapers. The majority of the blame during the first 10 days focused on the shortage of pathologists testing for BSE, as well as on farmers and their unnatural methods of farming:

> Alberta Agriculture Minister Shirley McClellan said Friday she fears some of the province's farmers are illegally feeding their cattle protein meal specifically manufactured for other animals, increasing the chances that mad cow disease could spread and further threaten the province's $3.8-billion beef industry. (Olsen, 2003, p. A1)

There were also a large number of articles that blamed the media for sensationalizing the crisis: "Everybody is scared right now, said one man, who like many others would not give his name and blamed media reports he said were blowing the situation out of proportion."(Holubitsky, 2003, p. A2)

A category that was not all that common was 'government' (main=5%). Even when government was mentioned, the tone of the theme was most often positive, applauding the government for its transparency and proactive measures in implementing a tracking system years before.

**Anchoring**

An event that made the Canadian crisis different from that of other countries was the fact that, during the time of the BSE crisis, there were two other large health concerns

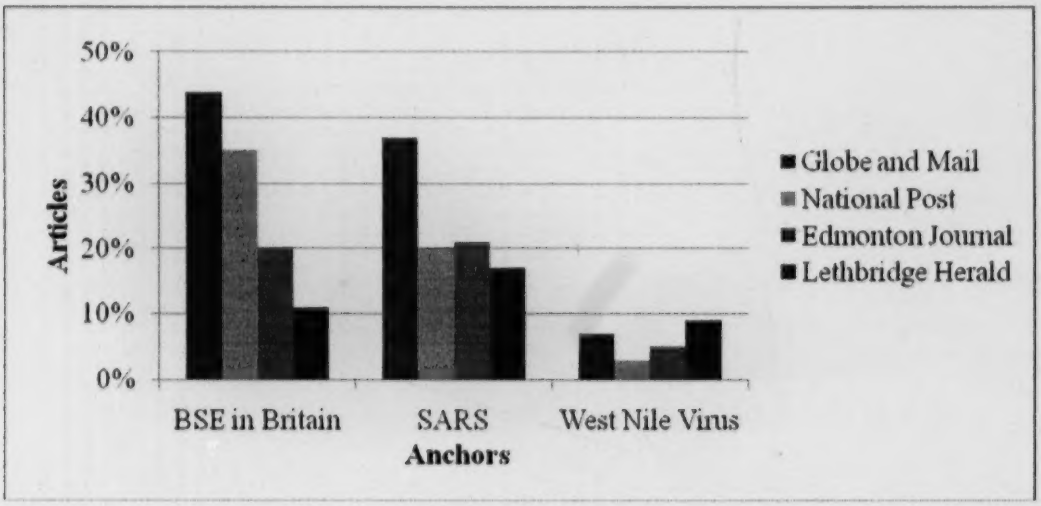
threatening the Canadian population; Severe Acute Respiratory Syndrome (SARS) and West Nile Virus. These two health risks often competed for headlines with BSE. In fact, the diseases were often compared to each other, as recounted in a *Globe and Mail* article: "SARS, West Nile, Mad-cow. The three horsemen of fear filled the headlines, injuring the economy and frightening many of us out of our wits. The point is a moral one. In a suffering world beset by real afflictions, it is simply obscene the way we fixate on minor or non-existent health threats" (Gee 2003, A15). In the articles pertaining to BSE, *The Globe and Mail* had the most mentions of SARS and West Nile Virus (37% and 7% respectively).

A common technique used by journalists was to compare BSE in Canada to BSE in Britain. Washer (2005) argues that a social representation of a particular crisis is shaped by historical events and contemporary symbols. Certain past events, images and metaphors are chosen to anchor the new phenomenon.

> McLellan [then a Canadian Minister of Health] is upset some reports have put the current mad cow scare in Canada on a par with the devastating 1990s epidemic in the United Kingdom. "In my opinion, it is completely irresponsible for anyone in the media to suggest that this is like what the UK went through," she said in an interview. "Why would anybody say that? They had approximately two million cows infected. We've got one."(Anon., 2003, p. C2)

As depicted in Figure 2-4, 20% of all articles during the first 10 days after the confirmation of Mad Cow Disease anchored the news article to what had happened in Britain; during the first day, 50% of the articles compared Canada's crisis to Britain's.

**FIGURE 2-4 Percentages of articles with anchoring references by newspaper**




**Discussion**

Results showed that economic impacts were the primary focus of Canadian media coverage. These impacts were mostly related to the effects on the general economy and trade. In Canada, health risk concerns had very little media coverage. This was very different than the media representations in Britain, as previously described for the media content analysis conducted by Brook (1999).

The Canadian newspapers also rarely included blame or mistrust in the stories. These were common themes in Britain, where there was criticism for modern British farming and food production, using words such as "contamination," "unnatural" and "cannibalism" (Washer, 2005). Horning and Eyke (2003) argue that European media channels were more likely to identify with political positions. Therefore, certain voices were more likely to appear legitimate in Europe than North America. Blame was unequivocally laid on the British Conservative government, ministers, and advisors who

had been saying that beef was safe for the past 10 years. British people were already skeptical of government policy on food as well as other matters (Washer, 2005). In Canada, articles referring to the government made up only 5% of the total and often had a positive tone. This was very different in Britain where, 97% of articles mentioned that the government was incompetent in its actions (Dornbusch, 1998). In Britain, there was a lack of governmental co-ordination in explaining the governmental plan and economic impact of the crisis. An ill-planned and ill-advised news conference portrayed the message that British beef was safe, but conversely stated that millions of cattle would be destroyed. This ultimately invited skepticism of the government and comment from the press, lay people and the scientific community (Payne, 1998). Without faith for the source of the message or guidance from credible experts, the media tended to seek out explanations which were often based on speculation rather than hard science. Therefore, British newspapers misrepresented health risks and copy editors further exaggerated the health risk in banner headlines that caught the attention of the public (Payne, 1998). This was not the case in Canada where there was early government involvement with the press about the concerns of BSE. In addition, articles involving the government were generally neutral or positive in tone and often implied that the government had the situation under control.

In regard to anchoring, the British crisis was again portrayed very differently than the Canadian crisis. The initial anchors used in the British newspapers framed BSE as a threat on par with earlier food poisoning outbreaks, such as *Salmonella* (a familiar health issue), which were unpleasant, but not life threatening. Through this, the media helped build the social representation of BSE not as an infectious disease, but rather as a

veterinary or an environmental issue (Washer, 2005). However, in 1996, as the transferability of the disease became apparent, the media changed the anchors of this disease from *Salmonella* to AIDS and the radioactive fallout generated by the accident at Chernobyl (Payne, 1998). These later anchors served to amplify the risk and instill fear (Washer, 2005). In contrast, Canadian journalists used anchors to reassure and diminish the risk, not to amplify fear. During the first discovery of BSE in Canada, the media compared the finding to that of the British BSE crisis. The Canadian crisis was unique in the fact that vCJD was not the only health concern in the media during the summer of 2003. Often BSE was compared to both SARS and West Nile Virus. However, since there were several deaths attributed to these diseases, the media used these anchors to downplay BSE as a minor risk which had not resulted in any domestically acquired deaths and was comparably well researched.

## Conclusion

BSE in Canada was initially defined in expert and policy discourse as an animal health problem. This was a key issue in shaping official responses. In the British circumstance the media served as the interpreters and communicators of risk in the absence of information from government officials and scientific experts. In Canada, the media served as a vehicle to present risk information from officials and experts.

If the Canadian BSE crisis had been defined as a potential public health issue, the precautionary principle was more likely to have been applied (Miller, 1999) (whereby protective measures may have been set in place without waiting until the actual reality or seriousness of the risk to become apparent (CAC, 1999)). In low risk situations,

messages from not only the government, but also the beef industry and the media, will have a notable impact on helping consumers respond to the BSE crisis (Wansink, 2004). Therefore, it can be hypothesized that both media and circumstances play a very important role in formulating risk perceptions, and knowledge gained from a media content analysis may ultimately assist risk communicators and managers in determining some of the factors underlying public understanding and views on risks.

While these results indicate that the Canadian focus was more on economic concerns than human health impacts, and that Canadian beef consumption remained relatively unchanged as a result, it is recognized that these perspectives might be drastically changed should human health effects become manifest in Canada.

## References


Altheide, D.L. (1996). *Qualitative media analysis*. Thousand Oaks, CA: Sage Publications.

Anon. (2003, May 24). McLennan blames media for fear mongering. *The Lethbridge Herald*, p.C2.

Brooks, R. (1999). Newspapers and national identity: The BSE/CJD crisis and the British press. *Media, Culture & Society*, 21, 247-263.

Caplan, P. (2000). Eating British beef with confidence: A consideration of consumers' responses to BSE in Britain. In *Risk revisited,* Ann Arbor, MI: University of Michigan Press. (chap.7). Retrieved November 2, 2006, from http://www.site.ebrary.com/lib/doc?id=2001133.html

CAC. (1999). Proposed draft principles and Guidelines for the conduct of Microbiological Risk Management at Step 3. Rome: Joint FAO/WHO Food Standards Program. CX.FH 99/8.

Carragee, K.M., & Roefs, W. (2004). The neglect of power in recent framing research. *Journal of Communication,* 54, 214-233.

Cummins, E., Grace, P., Fry, J., McDonnell, K., & Ward, S. (2002). BSE: Risk, uncertainty, and policy change. *Risk: Health, Safety & Environment*, 13, 95-113.

Dimitrova, D.V., & Strömbäck, J. (2005). Mission accomplished? Framing of the Iraq war in the elite newspapers in Sweden and the United States. *Gazette: The International Journal for Communication Studies,* 67(5), 399-417.

Dornbusch, D. (1998). An analysis of media coverage of the BSE crisis in Britain. In S.C. Ratzan, (Ed.) *The Mad Cow crisis*. New York: New York University Press.

Driedger, S. M. (2007). Risk and the media: A comparison of print and televised news stories of a Canadian drinking water risk event. *Risk Analysis,* 27(3), 775-786.

Dunwoody, S. (1992). The media and public perceptions of risk: How journalists frame risk stories. In D. Bromley, & K. Segerson (Eds.), *The social response to environmental risk* (pp.51-84). Norwell, MA: Kluwer Academic Publishers.

Entman, R.M. (1993). Framing: Toward a clarification of a fractured paradigm. *Journal of Communication,* 43, 115-132.

Fiske, S.T., & Taylor, S.E. (1991). *Social cognition*. New York: McGraw Hill.

Fleras, A. (2003). *Mass media communication in Canada*. Scarborough: Thomson Nelson.

Frewer, L.J., Raats, M.M., & Shepherd, R. (1993). Modeling the media: The transmission of risk information in the British quality press. *IMA Journal of Mathematics Applied in Business & Industry,* 5, 235-247.

Frewer, L.J. (1999). Public risk perceptions and risk communication. In P. Bennett & K. Calman (Eds.), *Public communication and public health* (p.20). Oxford: University Press.

Friedman, S. M., & Dunwoody, S. (Eds.). (1999). Communicating uncertainty: Media coverage of new and controversial science. *Lea's communication series.* Mahwah, NJ: Lawrence Erlbaum Associates.

Gee, M. (2003, May 23) Stop your sniveling you bunch of pathetic hypochondriacs. *The Globe and Mail*, p.A15.

Goodel, R. (1987). The role of mass media in scientific controversy. In T. Engelhardt, & A. Caplan (Eds.). *Scientific controversies: Case studies in the resolution and closure of disputes in science and technology.* Cambridge: Cambridge University Press.

Holubitsky, J. (2003, May 23). Evansburg cattle auction has somber tone. *Edmonton Journal,* p.A2.

Horning Priest, S., & Ten Eyck, T. (2003). News coverage of biotechnical debates. *Society*, 40(6), 29-34.

Kasperson, R.E., Kasperson, J.X., & Dow, K. (2001). Vulnerability, equity, and global environmental change. In Kasperson, J.X., & Kasperson, R.E. (Eds.). *Global enivronmental risk* (pp.247-272). London: United Nations University Press and Earthscan.

Kim, S.H., & Willis, L.A. (2007). Talking about obesity: News framing of who is responsible for causing and fixing the problem. *Journal of Health Communication,* 12, 359-376.

Kitzinger, J., & Reilly, J. (1997). The rise and fall of risk reporting. *European Journal of Communication,* 12(2), 319-350.

McQuail, D. (Ed.). (2002). *McQuail's Reader in Mass Communication Theory*. London: Sage Publications.

Miles, M.B., & Huberman, A.M. (1994). *Qualitative data analysis: An expanded sourcebook.* London: Sage Publications.

Miller, D. (1999). Risk, science and policy: Definitional struggles, information management, the media and BSE. *Social Science & Medicine*, 29, 1239-1255.

Mitura, V., & Pietro, L. (2004, June). *Canada's beef cattle sector and the impact of BSE on farm family income* (Publication No. 21-601-MIE-No.069) Retrieved Novemeber 24, 2006, from Statistics Canada Access: http://www.statcan.gc.ca/english/research/21-601-MIE/21-601-MIE2004069.pdf

Moscovici, S. (1984). The phenomenon of social representations. In R.M., Farr & S. Moscovici (Eds.), *Social representations* (pp.3-69). Cambridge: University Press.

Newig, J. (2004). Public attention, political action: The example of environmental regulation. *Rationality and Society*, 16(2), 149-190.

Olsen, T. (2003, May 24). New fears over prohibited feed. *Edmonton Journal,* p.A1.

Payne, G.J. (1998). Media coverage of the Mad Cow issue: Introduction. In S.C. Ratzan, (Ed.) *The Mad Cow crisis*. New York: New York University Press.

Raude, J., Fischler, C., Lukasiewicz, M.S., & Flahault, A. (2004). GPs and the social amplification of BSE-related risk: An empirical study. *Health, Risk & Society*, 6(2), 173-185.

Slovic, P. (2000). *The perception of risk*. Sterling, VA: Earthscan Publishing.

Smith, G. (2003, May 21). Meat is safe, experts say. *The Globe and Mail,* p.A1.

Staples, D. (2003, May 21). Fear fostered CJD death predictions: Only 135 cases linked to disease in Britain. *Edmonton Journal,* p.A5.

Stemler, S. (2001). *Practical assessment research and evaluation.* Retrieved October 10, 2006, from http://pareonline.net/getvn.asp?v+7&n=17

Wansink, B. (2004). Consumer reactions to food safety crisis. *Advances in Food and Nutrition Research,* 48, 103-150.

Washer, P. (2005). Representations of Mad Cow disease. *Social Science & Medicine*, 62, 457-466.

Yanning, P., MacCann-Hiltz, D., & Goddard, E. (2004, August). *Consumer demand for meat in Alberta Canada: Impact of BSE.* Paper presented at the 2004 meeting of the American Agricultural Economics Association, Denver, CO.

## Chapter Three: Paper #2 (Telephone Survey)

## "Public Risk Perspectives of Mad Cow Disease"

(Target Journal – *Risk Analysis*)

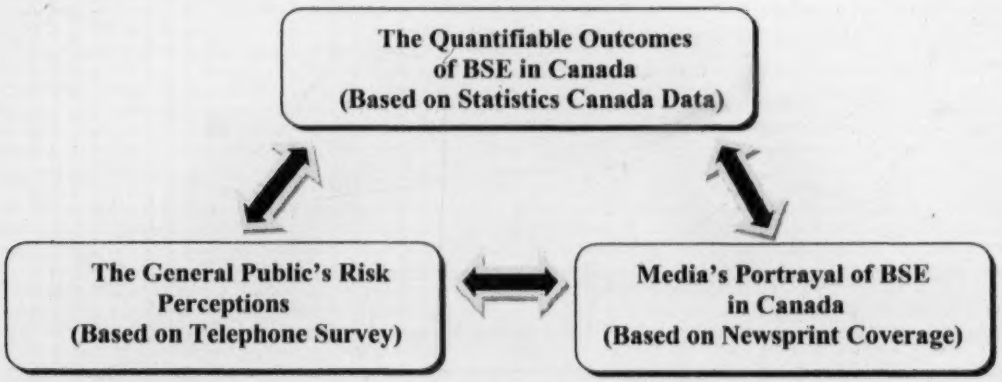
The consequences of a risk can reach beyond a physical harm to humans and their environments to include indirect effects on social institutions and the economy (Kasperson & Kasperson, 1996). This was true of the discovery of the first naturalized case of Bovine Spongiform Encephalopathy (also known as BSE or Mad Cow Disease) in Canada on May 20, 2003. The finding resulted in considerable mass media reporting, as well as large economic losses for Canada and in particular the province of Alberta.

The media's portrayal of BSE and many of the quantifiable economic and health outcomes of this risk have been examined. Research on how the Canadian newsprint media portrayed the events of BSE confirmed that the initial discovery resulted in immense media coverage (Boyd et al., submitted). In general the results of the analysis demonstrate that economic impacts were the primary focus of Canadian media coverage. Notably these impacts were mostly related to the effects on the general economy and trade. Health risk concerns had very little media coverage (Boyd et al., submitted).

A Statistics Canada publication states that Canadian beef producers reported an estimated $6.3 billion loss by early 2004 (Mitura & Pietro, 2004). However, this financial loss was not caused by a lack of consumption of beef by Canadians, as consumption did not decrease after the first confirmed case of BSE in Canada (Yanning et al., 2004) – rather it was due to marked decreases in exports. The stability in overall domestic beef consumption may be attributed to the fact that there has yet to be a confirmed case of vCJD acquired from eating Canadian beef. Therefore, the quantifiable outcomes discussed throughout this paper include both the economic impacts as well as the recognized absence of a health issue in Canada.

Although this information on how BSE risk was communicated through the media and what its effects were on the economy, little research has explored how the general public viewed the risks of BSE and why beef consumption did not decrease. Often in risk studies it is assumed that media content both reflects the factual aspects of the risks and can be used as a surrogate for understanding public risk perspectives (e.g. Frewer et al., 2002 on GMF; Griffin et al., 1998 on Cryptosporidium). However, these assumptions are seldom validated through empirical analysis. This paper seeks to address this information deficiency. Accordingly, this paper has two primary objectives. The first is to explore the general public's views to better understand the perceived nature, impact and consequences of BSE and vCJD in Canada. It has been shown that this type of analysis and understanding of how the risk is perceived (particularly in the context of other factors related to the risk) is essential for effective risk management and communication (U.S. Presidential/Congressional Commission on Risk Assessment and Risk Management, 1997; U.S. National Research Council, 1996). The second objective is to examine how these perspectives relate to the media's reporting and the quantifiable economic and health outcomes of BSE in Canada (Figure 3-1).

**Figure 3-1 Illustration of objectives: Understanding the relationship between the quantifiable economic and health outcomes, the general public's perspectives and the media's portrayal of BSE**


The Quantifiable Outcomes of BSE in Canada (Based on Statistics Canada Data)
The General Public's Risk Perceptions (Based on Telephone Survey)
Media's Portrayal of BSE in Canada (Based on Newsprint Coverage)

## Background

### BSE in Canada

As previously noted, the first confirmed Canadian case of BSE was reported to the general public on May 20, 2003. Since then, 11 further confirmed cases of Canadian cattle with BSE have been found, occurring in: January 2005, January, April, July (2) and August 2006; February, May and December 2007; February and July 2008. BSE is one of a number of diseases known generally as Transmissible Spongiform Encephalopathies (TSEs). Other examples include Scrapie in sheep, Chronic Wasting Disease (CWD) in deer and elk and variant Creutzfeldt - Jakob Disease (vCJD) in humans. Although one Canadian was diagnosed with vCJD in 2002, it was found to be acquired by eating British beef while overseas – to date, there has not been a domestically acquired case.

The discovery of BSE had considerable economic effects for Canada. Many industries were affected, including restaurant and fast food industries, cattle auctions,

cattle haulers, slaughter plants, feed mills, etc. In particular cattle producers were greatly affected by the finding of BSE in Canada. Over 40 countries including the United States immediately closed their borders to live cattle and beef products. After the borders were closed to beef products, Canadian cattle prices decreased immediately. In the fall of 2004, slaughter prices were still only about 73% of what they were before May 2003 (Statistics Canada, 2006).

Before the first case of BSE, cattle and beef producing activities had been expanding, especially in Alberta (Le Roy et al., 2006). By 2003, approximately half of what was produced in Canada was intended for foreign markets (Le Roy et al., 2006); in fact, Canada exported more than one million head of cattle per year to the United States alone (Statistics Canada, 2006). It has been argued by Leiss and Nicol (2006) that the government and risk managers poorly handled the risk of BSE by not anticipating and planning for the economic risk, which was the most serious for Canadians. They state that "officials knew that the first case (called the "index case") would bring an economic disaster to Canada's beef producers - because this fact is clearly acknowledged in a CFIA technical publication published, ironically, shortly before May 2003." (p. 898) However, Leiss and Nicol argue that government and industry risk managers did not adequately communicate to farmers the need to restrict herd size until the risk diminished.

**Risk Perceptions of Albertans**

Little work has been done concerning the risk perspectives of Canadians or among specific populations such as Albertans (Krewski et al., 2005; Dosman et al., 2001; Jardine et al., 1995). However, what little research has been conducted uses drastically different approaches to understand risk perception and its salient contributors. Krewski et

al. (2005) found that in general, Canadians regard risks as more acceptable if they are voluntary. Perceived level of risk depends on each individual's awareness, the availability of knowledge, and the accuracy of the information. Krewski et al. (2005) posited that individuals depend on an 'experiential' model to determine the acceptability of risks based their pre-existing mental model, which includes the following factors:

> experience, previously held ideas surrounding a risk issue, perceptions of risk, information from trusted regulatory sources, expert information, news media, social amplification of risk issues and an understanding of the risk probabilities involved. (Krewski et al., 2005, p. 3).

Research by Dosman et al. (2001) took a different approach by examining how socioeconomic determinants influence the food related risk perceptions among Albertans. They found that Albertan woman had lower tolerances of food risks than men, older populations were more likely to be concerned about food risks, and those with higher education perceived less risk. Those with a greater than average income were less concerned, and if there were children in the household, the respondent perceived food risks as more dangerous. These research results mirror other findings on the importance of socioeconomic factors in risk perceptions (see Davidson and Freudenburg, 1996; Jardine et al., accepted).

Of particular relevance to this study are Dosman et al.'s (2001) linkage between print media as a source of risk information and the perceptions of food safety. If the respondent obtained safety information on food bacteria from print media they were less likely to perceive the risk as high. By comparison, individuals who received information from other sources were more likely to perceive the risk as high (Dosman et al., 2001).

**Theoretical Background**

The theory of mental models is widely accepted and utilized in the risk communication field to understand how individuals or groups understand risks. This theory was used to guide the development of the survey instrument used in this research and to better understand the linkages between the media's portrayal of BSE, the quantifiable economic and health outcomes of the disease and why Albertans perceived the risk as they did. The theory of mental models has been defined as a method used to identify accurate or inaccurate beliefs of a particular hazard which are held by a target population (Breakwell, 2001). In this way, mental models can provide a way to establish if people extract accurate information and trust inferences about a risk from the information provided by media sources (Bostrom et al., 1994). Conceptionalizing how people view risks is crucial, as it has been shown that risk can mean different things in different contexts (Fischhoff et al., 1993). An awareness of these contexts is essential as misunderstanding and conflict may arise from risk perspectives based on inaccurate or withheld information or from inaccuracies in how risk managers believe people view a risk.

As this theoretical framework involves bridging the gap between expert and lay mental models, it is necessary to involve "adding missing concepts, correcting mistakes, strengthening correct beliefs, and deemphasizing peripheral ones" (Fischhoff et al., 1993, p.197). Bostrom et al. (1994) suggest that without knowing how affected parties perceive the risks, erroneous decisions can be made by excluding important information or neglecting to elucidate inaccurate information. If these misconceptions are not found,

then confusion may also be produced and trust in the communicator can be eroded (Bostrom et al., 1994).

Dake (1991) affirms that to understand why people fear a risk or hazard, an understanding of the political, historical, and social context in which the risk formed is required. In regard to the historical context, individuals construct their mental models of a risk from past experience, prior knowledge and comparisons to similar events. Through past experience and comparisons individuals either fortify or alter their mental models as their beliefs are reinforced or alternatively weakened causing a re-evaluation of ideas. In this way risks are not only created through individual cognition, but correspond to worldviews, beliefs and value systems (Dake, 1991). Furthermore, Breakwell (2001) states that these models are shared between members of a group and a clear understanding of the shared comprehension of the risk is needed to effectively manage the risk. For this reason, it is beneficial to also be aware of how the media portrays the risk in question, as often people are not poised to decide anything definitive and would rather just understand the risk in terms of how it pertains to them (Fischhoff et al., 1993).

## Methodology

A random-digit dialed telephone survey was used to determine the public perspectives of BSE. McComas (2006) states that surveys can provide rapid and representative insights into people's attitudes, beliefs and knowledge during a crisis. A representative sample of Albertans was accessed through the Alberta Survey - an annual provincial survey administered by the Department of Sociology, University of Alberta, through its research facility, the Population Research Laboratory (PRL). The survey

explored the public's opinion on a wide range of public policy concerns. The Alberta Survey is based on a series of client directed questions, as well as socio-demographic variables. Clients consist of academic researchers, government departments, and non-profit organizations. In the 2007 survey, client questions explored a wide range of research topics such as cell phone use and driving, lifestyle activities, Alberta's economy, food safety, and mental illness and stigma. The BSE questions were based on themes that arose from both a previously conducted media content analysis (Boyd et al. submitted) and literature on previous BSE crises in other countries (Brooks, 1999; Dornbusch, 1998; Miller, 1999; Washer, 2005). The survey questions and script pertaining to this study may be found in Appendix C.

As suggested by Fischhoff et al. (1993), to best determine mental models, survey procedures began with an open ended question, followed by more in-depth questions to understand specific risks. The open ended question asked: 'What was one major thing you remembered about this event from the news?' Quotes from respondents were used to explore some of the specific perceived risks of BSE. Second, respondents were asked to rank a series of BSE related risks that were present in the media content analysis on a 5 point Likert scale (ranging from 1 = 'no risk at all' to 5 = 'a very large risk'). This approach is consistent with previous risk perception research (Slovic et al., 1993; Slovic et al., 1995). Albertans were asked: 'Finding Mad Cow Disease here presented how much risk in terms of its potential impact on: (1) The Canadian economy; (2) The Alberta economy; (3) Individual Alberta farmers; (4) The future of family-owned farms in Alberta; and (5) The possible health effects on people who consume Alberta beef.

The subsequent questions explored the general public's perceived overall risk of BSE, as well as how the risk would change if a case of vCJD was found in Canada. The first of these questions asked: 'On a 5 point scale with 1 being 'no risk at all' and 5 being 'a very large risk', what do you think the *overall* risk of Mad Cow Disease is in Canada?' The second question asked: 'If, in the future there is a human death from this disease in Canada that can be shown to be caused from eating Canadian beef, would your assessment of the *overall risk* of Mad Cow Disease be…" People were asked to rank the change in the overall risk on a 3 point Likert scale (1= 'the same as it is now;' 2= 'slightly higher than it is now;' 3= 'a lot higher than it is now').

A further question was asked to examine the context of people's understanding of the risk of BSE. Respondents were asked to compare the risk of Mad Cow Disease in Alberta to other health risk events on a 5 point Likert scale (ranging from 1 = 'BSE is a lot less risky' to 5 = 'BSE is a lot more risky;' 3= 'risks are about equal'). They were asked: 'How would you compare the risk of Mad Cow Disease in Canada relative to:'1) Severe Acute Respiratory Syndrome in Canada; and 2) The Mad Cow Disease Event in Britain.

Additional survey questions on BSE that were asked in the 2007 Alberta wide survey (including the change in provincial and federal government trust and the tone of media reporting) will be reported elsewhere as they relate more to other theoretical frameworks and research objectives.

The 2007 Alberta Survey was conducted from March to May 2007. The target participant population was those between 18 years of age or older who, at the time of the survey, were living in Alberta and could be contacted by direct dialing. From this

population, three samples were drawn to analyse the province of Alberta, including the Edmonton metropolitan area (n=403), Calgary metropolitan area (n=402), and the rest of the province ("other" Alberta) (n=402). These sample sizes are representative of the current provincial demographic distribution (Statistics Canada, 2006). Survey estimates for each area sub-sample of 400 were estimated to be within ±5%, at the 95% confidence level. Overall, the total sample size was 1207 people. A random-digit dialing approach was used to ensure that respondents had an equal chance to be contacted whether or not their household was listed in the telephone directory. Duplicate telephone numbers were purged from the computer list. Only one eligible person was selected as a respondent per each household. The survey was designed to selectively target equal numbers of males (N=601) and females (N=606). The overall response rate for the survey was 36.5%. This was determined by dividing the number of people who participated in the sample (N=1207) by the number of completed interviews (N=1207), incomplete interviews (N=23), refusals (N=1968), and language problems (N=111).

The questions were pre-tested on 20 Edmonton households by trained interviewers. The results from the pre-test were reviewed for potential sources of non-sampling errors including confusing wording, question order effect and inadequate response categories. The appropriate modifications were then made to the questionnaire. The questions and protocols were approved by the Faculties of Arts, Law and Science Research Ethics Board before the questionnaire was administered to the public.

The survey was administered through a multi-station CATI (Computer-Assisted Telephone Interviewing) system installed on a local area network at the Population Research Lab. The Ci3 Wincati System is a PC-Windows based product created by

Sawtooth Software, Northbrook, Illinois. This system facilitates the exchange of information among interviewing PC stations and supervisor stations linked using a file and database server during the data collection period. It includes features such as automatic routing of questions and built in checks for inconsistencies and out-of-range codes. Interviewers inputted responses directly into computers so it was possible to continually monitor closed-ended responses. Overall, 10% of respondents were contacted again by supervisors for interviewing validation. The data was tabulated and cleaned using SPSS for Windows statistical package version 15 (a product of SPSS Inc., Chicago, Illinois).

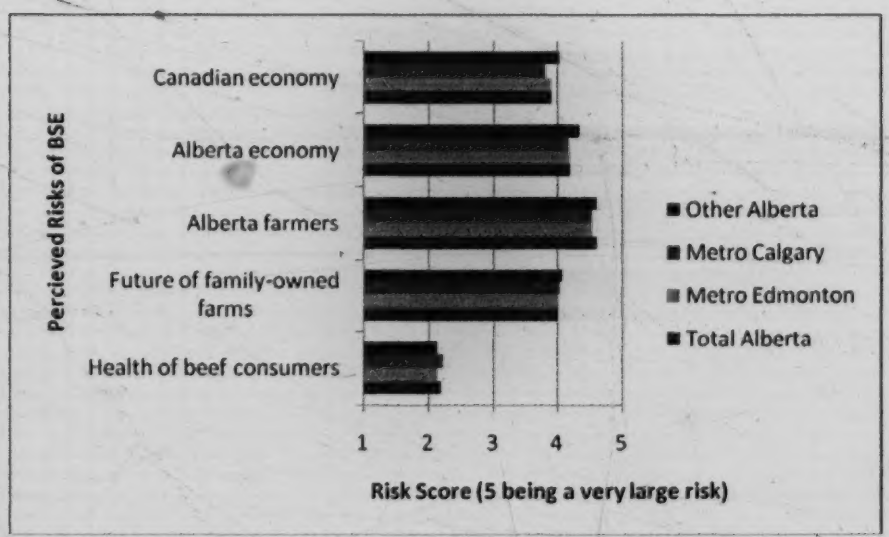
## Results

### Risk Perceptions

Figure 3-2 illustrates the risk ranking for the various potential areas of impact for each section of Alberta and for the entire province. The risk perspectives of BSE in terms of potential economic impacts mirrored both the quantifiable economic and health outcomes of BSE in Canada and media reporting of the event. On the whole the results for all three areas of the province were very similar for the economic impact questions. The first question asked respondents what they thought the risk of BSE was in terms of the Canadian economy. Alberta as a whole had a risk ranking of 3.9 out of 5 (with 5 being a very large risk). A common comment from respondents was that "BSE had great effects on the economy." The second question asked what the risk of BSE was in terms of the Alberta economy. The reason behind this question was the hypotheses that BSE was a greater economic problem in Alberta than in other provinces, partly because

Alberta has approximately a quarter of the total amount of cattle in Canada (Statistics Canada, 2001). In addition, survey respondents were from Alberta and therefore had firsthand experience with the economic issues. It was therefore expected that the risk of Mad Cow Disease in terms of the Alberta economy was rated slightly higher, with a risk ranking of 4.2 out of 5.

**Figure 3-2 Risk of BSE in terms of impact on economy, beef industry and health**




The subsequent two questions dealt with the future of farming. As stated previously, by fall 2004, beef producers were reporting estimated losses of 6.3 billion dollars. For that reason, it was crucial to examine if the general public perceived a risk to farming, especially for Alberta cattle producers. The first question asked respondents the risk of BSE in terms of the potential impact on Albertan farmers. This question resulted in a high risk ranking of 4.6 out of 5, indicating that respondents felt there was a large

risk to Alberta farmers. One respondent made the comment "that it [BSE] caused so much hurt and damage to the cattle industry. The actual health consequences were so insignificant and it was all out of proportion to the damage it did to the industry."

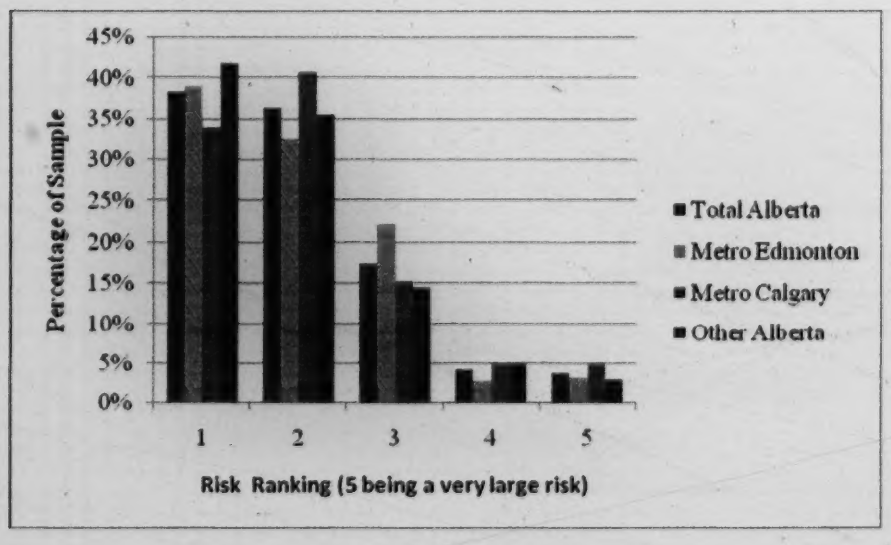
The future of family owned farms related to the previous question, but emphasized the risk to the future of family owned farms versus that of large-scale individual or corporate farmers at the time of impact. Respondents ranked this risk as slightly lower (4.0 out of 5) than that to all Alberta farmers. From these four questions it can be concluded that this representative sample of Albertans perceived that there were fairly high risks to the economy as well as the farming industry. A respondent remembered "the devastation of the farming and cattle industries in Canada." Another respondent from a rural area of Alberta stated that "it affected my whole family and the economy was really affected."

The next question dealt with the potential risk of BSE in Canada in terms of human health. Overall, the risk ranking in regards to potential effects on human health for Alberta was quite low at 2.2 out of 5. Metro Calgary had the lowest risk ranking with 2.1 and Metro Edmonton had the highest with 2.2, suggesting there was not a large difference in any of the specific locations that were questioned for the survey. The open ended comments ranged greatly in regard to health concerns. One respondent stated that "eating beef with Mad Cow Disease is not going to hurt anybody; the scare was so stupid." However, there were other contradictory comments, such as one statement where a respondent remembered "the absolute panic with regards to the potential health effects."

**Overall Risk of Mad Cow Disease**

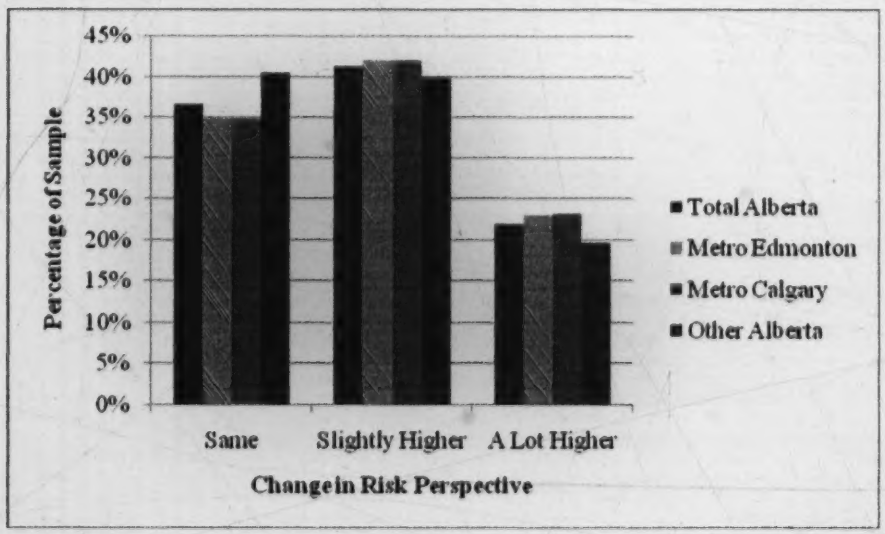
The second element of the survey comprised of questions involving the overall risk of Mad Cow Disease in Canada and if perceptions of the risk may change should there be a case of vCJD in Canada. The results (shown in Figure 3-3) demonstrated that respondents on average perceived the overall risk of Mad Cow Disease as low, with an average risk ranking of 2.0 out of 5. In total, 38.3% of the sample stated that the overall risk in Canada was 'no risk at all.' Only 3.8% of Albertans stated that the overall risk of Mad Cow Disease in Canada was a 'very large risk.' One respondent suggested that "it [BSE] is an extremely low occurrence and rarely happens". Others commented on the safety systems put in place, "[BSE] was quickly managed by government processes, the industry controlled future outbreaks. The localized tracking system is very good so they can track it down to the source very quickly."

**Figure 3-3 Overall risk of Mad Cow Disease in Canada**



As noted previously, there has yet to be a confirmed death from vCJD that has been domestically acquired. However, it was hypothesized that BSE in Canada might be deemed more risky if a case of vCJD was confirmed from eating Canadian beef. The survey results confirmed that the perception of overall risk would change if a case of vCJD was found. For the total sample, 36.7% of respondents stated that the overall risk of BSE would 'remain the same', 41.3% stated that the risk would be 'slightly higher', while 21.9% responded that the risk would be perceived as 'a lot higher' (Figure 3-4).

**Figure 3-4 Overall risk change if a case of vCJD was confirmed in Canada**

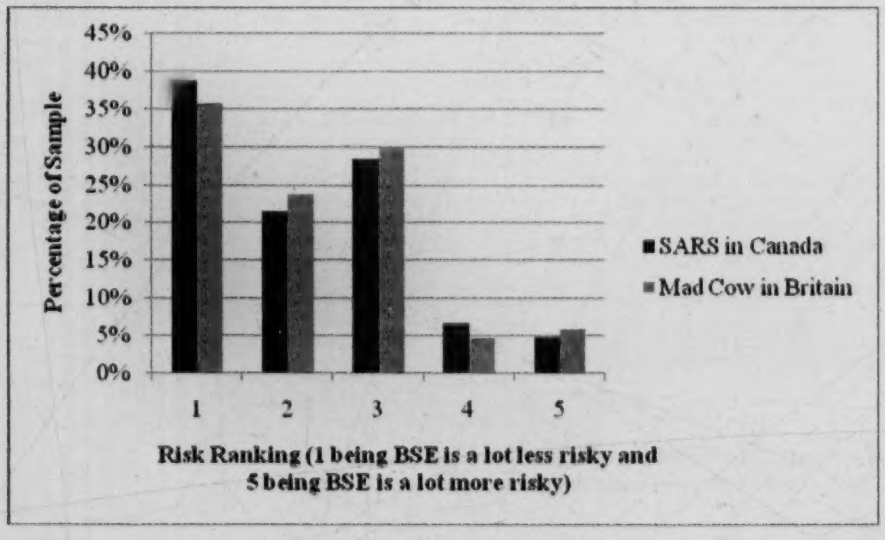



**Risk Comparisons**

One possibility for why respondents on average stated that the risk of BSE was economic rather than health related was that journalists compared BSE to other events and diseases thereby making BSE appear less risky in comparison to other risks.

Respondents were therefore asked to rank the risk of BSE in Canada against the risk of both Severe Acute Respiratory Syndrome (SARS) and BSE in the United Kingdom. The results are shown in Figure 3-5.

**Figure 3-5 Overall risk comparisons of BSE to SARS and the British BSE event**




During the summer of 2003, BSE was not the only disease making headlines, as Severe Acute Respiratory Syndrome was a major health concern affecting many parts of Canada. Overall 38.9% of the respondents stated that BSE was 'a lot less risky' then SARS, 4.8% stated that BSE was 'a lot more risky' and 24.4% of the sample of Albertans stated that the risks were 'about equal'. The average risk ranking for Alberta was 2.3 on a scale of 1 to 5 (5 = 'BSE is a lot more risky').

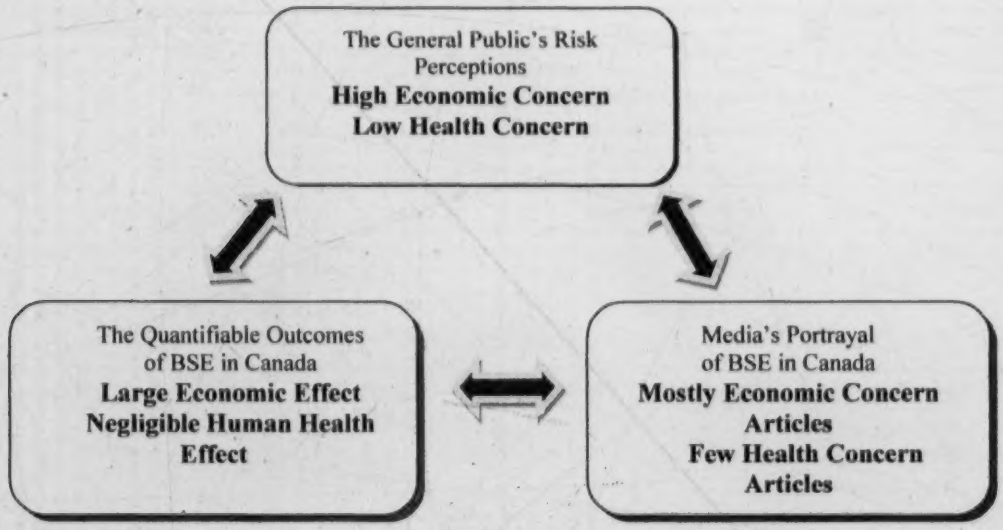
Respondents were also asked how they would compare the risk of Mad Cow Disease in Canada relative to the Mad Cow Disease event in Britain. During the first 10

days following the first case of BSE in Canada, a sample of four newspapers showed that 20% of the articles compared the events of Canada to that of Britain (Boyd et al., submitted). A respondent commented that he remembered "the fact that it was one cow in Canada, rather than thousands like in Britain." The overall Alberta sample demonstrated that 35.9% of respondents stated that the Canadian BSE event was 'a lot less risky' then the British BSE event, 5.8% stated that the Canadian event was 'a lot more risky' and 26.4% of respondents stated that the risks were 'about equal'. The average risk ranking for Alberta was 2.2 on a scale of 1 to 5 (5 = 'BSE is a lot more risky').

## Discussion

The results of the survey verify that the general public's perspectives of the risks of BSE mirrored the quantifiable economic and health outcomes as well as how the disease was portrayed in the media. This relationship is exemplified in Figure 3-6. It can be argued that this can be attributed to three factors: a trust in government fostered by the media; a history and pride of beef production in Alberta and how the risk was anchored.

**Figure 3-6 Illustration of results: Mirror relationship between the quantifiable economic and health outcomes, the general public's perspectives (mental models) and the media's portrayal of BSE**


The General Public's Risk Perceptions
High Economic Concern
Low Health Concern
The Quantifiable Outcomes of BSE in Canada
Large Economic Effect
Negligible Human Health Effect
Media's Portrayal of BSE in Canada
Mostly Economic Concern Articles
Few Health Concern Articles

It has been shown that media frequently reported the quantifiable economic and health outcomes of BSE and how the risk of BSE was being controlled, and served as a tool to inform the public of the disease (Boyd et al., submitted). Often government agents were the source of information and media reported on how the government had the situation under control. For the most part, newspaper articles presented a positive or neutral tone in regard to government. This was not the case with other countries such as Britain. A study of *The Financial Times* coverage completed by Dornbusch (1998) indicated how inaccuracies in British press reports, which stemmed from the government not communicating with the media early on in the event, heightened public fear in the early days of the crisis. Instead of reporting how the government was controlling the crisis in Britain, one-third of *Financial Times* articles between March and September

1996 stated that the government was incompetent in handling the BSE crisis. In general the British government had tried to protect the public from unnecessary fear by not commenting to the media early on about BSE: in doing so, they created a crisis which fostered even greater fear (Dornbusch, 1998). As media is a channel in which the public receives messages about a risk, it can be argued that the Canadian general public who received their information from newsprint media were being informed that the government had the situation under control. There are three premises for why the public appears to have trusted the Canadian government: (1) The media implied that the government had the situation under control and actual events did nothing to dispel this impression; (2) The government communicated with the press early on about BSE and the concerns of the disease; and (3) Articles involving the government were generally neutral or positive in tone. All of these factors were not present in Britain, where there was low trust in government during their BSE crisis (Dornbusch, 1998).

The second factor that may have affected the general public's perceptions was the history and dependence of many Albertans on the beef industry. The Canadian economy was affected by the borders closing to Canadian beef, as according to Statistics Canada, for every $100 million in exports by the cattle sector, $80 million is added to the national gross domestic product (GDP), $228 million is generated in total output, $41 million is added to labour income, and 3,000 jobs are created. Alberta was particularly affected as a total of 72% of fed cattle are located in Alberta (Le Roy et al., 2006). Between 1986 and 2001, the total number of cattle and calves increased from 3,746,000 to 6,500,000 in Alberta (Statistics Canada, 2001). As beef production did not decrease, it was theorized that the general public may be cognizant of the economic importance of beef production

to the province and the country. In addition, many comments from respondents in the open ended question were on the financial effects to those involved in the beef industry. Other comments were made such as how "Albertans rallied around the farmers and had barbeques in support" or the proliferation of stickers saying "I still love (designated with a heart) Alberta beef." Consequently the history of the beef industry in Alberta, as well as the pride many have in the image of being a cattle province, may have contributed to fact that beef consumption did not decrease.

Mental models theory would suggest that if the public know nothing about a topic, a new message would be incomprehensible (Morgan et al., 1992). In the case of BSE in Canada, it was found that respondents already had an understanding of BSE, partially because of the comparison to other events. The theory known as social representations theory explains how the public may conceptualize risks given these comparisons (Moscovici, 2001). Journalists will commonly utilize anchors to compare a new event or hazard to past events and metaphors. This functions to familiarize a new risk and make it more familiar and therefore more comprehensible. In Britain, during the later stages of the BSE crisis the newspapers compared Bovine Spongiform Encephalopathy to AIDS or the radioactive fallout from Chernobyl (Payne, 1998; Washer, 2005). This had the effect of making BSE and vCJD sound more dangerous to the general public (Washer, 2005) and may have contributed to the fact that beef consumption dropped by 28% in 1990 and 40% in 1996 (Miller, 1999).

In Canada, newspapers compared BSE to the crisis in Britain and SARS. These comparisons served to make the events of BSE in Canada more familiar and therefore less alarming. In the content analysis research 20% of all articles during the first 10 days

after the confirmation of Mad Cow Disease compared the disease to what had happened in Britain; during the first day, 50% of the articles compared Canada's crisis to that in Britain (Boyd et al., submitted). The journalist's techniques of comparing the events to an anchoring event (in this case, events with higher perceived risk) may have influenced the lack of concern about health risk in how the public perceived the BSE crisis.

The findings of this study support and extend the theory of mental models in two respects: 1) Canadians utilized an experiential model based on past events to determine if a risk is acceptable (Krewski, 2005); and 2) news media helped shape mental models by providing the information that individuals use to make their risk judgements.

The experiential model is evident in how the media anchored and compared risk to previous events. In doing so, the media enabled Canadians to draw from existing mental models surrounding a variety of risk and associate them with the threat of BSE and vCJD. News media therefore became one of the factors that influenced perceived risk levels by providing accurate information. This may have contributed to accurate mental models of the risk of BSE and vCJD as they matched the quantifiable economic and health outcomes. Citizen actions, which stem from their mental models and are informed by print media reporting, could have caused consumption of beef to decrease and engender negative reactions to the risk *if the reporting was inaccurate*.

While this research cannot empirically link these concepts because media consumption was not directly measured, other research Jardine et al. (1995 as cited in Dosman, 2001) supports this hypothesis by demonstrating that the better informed individuals were about a risk, the less likely they perceived health issues associated with it to be hazardous.

## Conclusion

A survey of a representative sample of Alberta public confirmed that there were high perceived risks to the economy and lower perceived health related risks about the presence of BSE in the province. Large quantifiable economic effects for the general economy and especially for beef producers have been documented. However, there has yet to be a case of vCJD acquired from eating Canadian beef. The media portrayal of the risks of BSE mirrored the quantifiable economic and health outcomes; newsprint coverage in Canada was comprised primarily of economic concern articles, with comparably fewer health concern articles. Therefore, the "mental models" of the Alberta public mirrored both the quantifiable outcomes and newspaper reporting. This may partially explain why beef consumption did not decrease (Yanning et al., 2004) whereas it did in countries such as Great Britain.

Leiss and Nicol (2006) argued that the government and risk managers mishandled the risk of BSE and failed to identify or manage the economic risk through communication with beef producers. We would like to bring forth another side of the argument of managing the risk of BSE. In regard to the general public, the government appeared to have appropriately managed the risk through communication with the media that engendered public trust in government. Research by Morgan et al. (1992) suggests that if the general public has inaccurate information they may misconstrue a message. By reporting the risks early in the crisis and being an open source for media reporting, the risks were managed more effectively and with less public controversy than in other countries. This was an important factor in the management of the risk in Canada where

poor risk communication (such as had occurred in the UK) might have potentially caused more damage than the actual risk of BSE (Bostrom et al., 1994). As cases of BSE continue to be found, it is necessary for good risk communication practices to continue. This is especially true should a case of domestically acquired vCJD occur in Canada, as this will undoubtedly change risk perspectives (as noted in the results of the survey).

Most risk managers and policy makers would agree that having the actual consequences of a risk mirrored in both the media portrayal and public understanding of the issue is a desirable result for a risk event. This study suggests that early communication with the media and taking visible control of an event can engender trust in government risk managers, and can help achieve this outcome.

**References**

Bostrom, A., Atman, C.J., Fischhoff, B., & Morgan, M.G. (1994). Evaluating risk communications: Completing and correcting mental models of hazardous processes, Part II. *Risk Analysis*, 14(5), 789-798.

Boyd, A.D., Jardine, C.G. & Driedger, M.S. (2008) Canadian media representations of BSE and vCJD. Submitted to *Journal of Toxicology and Environmental Health*.

Breakwell, G.M. (2001). Mental models and social representations of hazards: the significance of identity processes. *Journal of Risk Research*, 4(4), 341-351.

Dake, K. (1991). Orienting dispositions in the perception of risk: An analysis of contemporary worldviews and cultural biases. *Journal of Cross Cultural Psychology*, 22(1), 61-82.

Davidson, D. J., & Freudenburg, W. R. (1996). Gender and environmental risk concerns: A review and analysis of available research. *Environment and Behaviour,* 28, 302-339.

Dornbusch, D. (1998). An analysis of media coverage of the BSE crisis in Britain. In S. C. Ratzan (Ed.), *The Mad Cow crisis.* New York, NY: New York University Press.

Dosman, D.M., Adomowicz, W.L., & Hrudey, S.E. (2001). Socioeconomic determinants of health and food safety-related risk perceptions. *Risk Analysis*, 21(2), 307-317.

Fischhoff, B., Bostrom, A., & Jacobs Quadrel, M. (1993). Risk perception and communication. *Annual Reviews Public Health,* 14, 183-203.

Frewer, L.J., Miles, S., & Marsh, R. (2002). The GM foods controversy. A test of the social amplification of risk model. *Risk Analysis,* 22(4), 713–723.

Griffin, R.J., Dunwoody, S., & Zabala, F. (1998). Public reliance on risk communication channels in the wake of a Cryptosporidium outbreak. *Risk Analysis*, 18(4), 367-375.

Jardine, C.G., Krahn, H., & Hrudey, S.E. (1995) *Health risk perception in Alberta.* Eco-Research Chair in Environmental Risk Management Research Report 95-1.

Jardine, C.G., Boyd, A.D., & Furgal, C. (Accepted February 2008). Risk, gender and place – understanding the health risks in northern aboriginal communities. *Gender, Place and Culture.*

Kasperson, R.E., & Kasperson, J.X. (1996). The social amplification of risk. *Annals of the American Academy of Political and Social Sciences*, 545, 95-105.

Krewski, D., Lemyre, L., Bouchard, L., Brand. K., Dallaire, C., & Mercier, P. (July 2005). Public perception and acceptable levels of health risk among Canadians. Retrieved August 5, 2008, from Health Canada website: http://www.hc-sc.gc.ca/sr-sr/alt_formats/hpb-dgps/pdf/finance/hprp-prpms/final/2005-krewski-eng.pdf

Leiss, W., & Nicol, A.M. (2006). A tale of two food risks: BSE and farmed Salmon in Canada. *Journal of Risk Research*, 9(8), 891-910.

Le Roy, D., Klein, K.K., & Klvacek, T. (2006). The losses in the beef sector in Canada from BSE. Retrieved January 25, 2008, from University of Guelph website: http://www.uoguelph.ca/~catprn/PDF/Commissioned_Paper_2006-5_LeRoy.pdf

McComas, K. (2006). Defining moments in risk communication research: 1996-2005. *Journal of Health Communication,* 11, 75-91.

Miller, D. (1999). Risk, science and policy: Definitional struggles, information management, the media and BSE. *Social Science and Medicine,* 29, 1239-1255.

Mitura, V., & Pietro, L. (2004, June*). Canada's beef cattle sector and the impact of BSE on farm family income* (Publication No. 21-601-MIE-No.069). Retrieved November 24, 2006, from Statistics Canada Access: http://www.statcan.gc.ca/english/research/21-601-MIE/21-601-MIE2004069.pdf

Morgan, M.G., Fischhoff, B., Bostrom, A., Lave, L. & Atman, C.J. (1992). Communicating risk to the public. *Environmental Science Technology*, 26(11), 2048-2056.

Moscovici, S. (1984). The phenomenon of social representations. In R. M., Farr, & S. Moscovici (Eds.), *Social representations* (pp. 3-69). Cambridge: University Press.

Payne, G. J. (1998). Media coverage of the Mad Cow issue: Introduction. In S. C. Ratzan (Ed.), *The Mad Cow crisis*. New York: New York University Press.

Slovic, P., Flynn, J., Mertz, C.K. & Mullican, L. (1993) Health-risk perception in Canada, (Prep. for the Dept. of National Health and Welfare by Decision Research. Rept. 93-EHD-170).

Slovic, P., Malmfors, T., Krewski, D., Mertz, C.K., Neil, N., & Bartlett, S., (1995) Intuitive toxicology II. Expert and lay judgments of chemical risks in Canada, *Risk Analysis*, 15(6), 661-676.

Statistics Canada. (2001). *Census of agriculture*. Retrieved January 27, 2006, from http://www.statcan.ca/english/agcensus2001/index.htm.

Statistics Canada. (2006, June 26). *Canada's beef industry and BSE*. Retrieved February 30, 2008, from http://www41.statcan.ca/2006/0920/ceb0920_001_e.htm

U.S. National Research Council. (1996). *Understanding risk: Informing decisions in a democratic society*. Washington, D.C: National Academy Press.

U.S. Presidential/Congressional Commission on Risk Assessment and Risk Management. (1997). Framework for environmental health risk management. (Final Report, Volumes 1 and 2). Washington, D.C.

Washer, P. (2005). Representations of Mad Cow Disease. *Social Science and Medicine*, 62,457-466.

Yanning, P., MacCann-Hiltz, D.and Goddard. E. (2004). Consumer demand for meat in Alberta Canada: Impact of BSE. Paper presented at the 2004 meeting of the American Agricultural Economics Association, Denver, CO.

## Chapter Four: Conclusions

The work completed in this thesis uses the theories of risk perception and risk communication to better understand how the newsprint media portrayed BSE, and how the general public perceived the nature, impact and consequences of the discovery of the disease in Canada. The objectives of the research were to: 1) detail how the Canadian print media portrayed Mad Cow Disease and the risks involved with the disease; 2) describe how media events in Canada differed/compared to the media coverage in the United Kingdom; 3) explore how the general public perceived the nature of the risk; and 4) determine if public perspectives mirrored the media portrayal and/or the quantifiable economic and health outcomes of BSE in Alberta. The objectives were achieved through the use of a newsprint content analysis and a random-digit dialed telephone survey of a representative sample of Albertans.

The results from the first paper "Canadian Media Representations of BSE and vCJD" guided the methodology and design of the questions on the Alberta survey and consequently the second paper "Public Risk Perceptions of Mad Cow Disease." As a result, the common research linkage between the two papers of this thesis is the media content analysis. The results from this analysis aid in the examination of the links between the quantifiable outcomes of BSE, the public's perceptions of the risks and how the disease was portrayed in the media. This research sought to confirm the hypothesis through an empirical analysis and therefore sought to address this information deficiency. In addition, the findings may assist risk managers and government decision makers better

understand how the public perceived the risks of BSE and vCJD, as well as facilitate future decision making should more cases arise.

This chapter explores the results produced from this research and provides a summary of overall findings. Suggestions for future research and the future use of the survey results that were not included in the two papers also will be provided. Lastly, the final remarks section will review the relationship between the two papers.

## Summary of Findings

The results of this study demonstrate that the general public's mental models mirrored the newspaper reporting of BSE in Canada. The first confirmed case of BSE resulted in immense media coverage. The coverage of the events was based mostly on economic frames. Most of these were on the subject of the 'general economy'. However, there were also a great number of economic articles specifically on how 'trade' was affected, the 'plight of farmers' or how 'other industries' were affected by BSE. The economic effects were reflected in the risk perceptions of the general public. The majority of the respondents stated that they perceived a great risk to the Canadian economy and an even greater risk to the Alberta economy. Respondents also felt that there was a high risk to Alberta farmers and to the future of family owned farms.

There was also a great deal of Canadian newspaper articles that focused on how the situation was being controlled. These articles were often positive and focused on reassuring the public that the disease was under control. The second category which may have functioned to restore confidence in the public was the descriptions theme. The articles in this category aided in the understanding of the disease and its consequences.

The reassuring nature of the media articles were reflected in the results from the Alberta Survey, as respondents stated that they perceived the overall risk of BSE to be small.

There were few articles that focused on blame, in which fault was laid on a particular agency, group or individual. The government was also seldom discussed and when it was, articles had primarily a neutral or positive tone. Health concerns were also an uncommon theme among newspaper articles. The survey results similarly demonstrated that the perceived risk to one's health was much lower than the perceived risk to the economy and farming in Alberta. These last three themes of blame, government and health formed the basis of the major difference between Canadian and British reporting. Research by others (see Brooks, 1999; Dornbusch, 1998; Kitzinger & Reilly, 1997; Miller, 1999; Raude et al., 2004; Washer, 2005) confirmed that the government was portrayed very negatively in British newspapers. Reporting focused on blaming government and modern farming techniques for the occurrence of BSE.

The media in Britain also engendered fear by the immense amount of reporting on the health consequences and by anchoring BSE to other serious risks. In Canada the anchors that media utilized served to downplay the risk. The first anchor was BSE in Britain. In this regard, BSE in Canada was compared to the events of BSE in Britain. This contrast served to render the events of BSE in Canada as less dangerous as Canadians have witnessed BSE and its devastating effects in Britain. Therefore, what could have been a frightening and foreign disease became familiar and more controllable. Two other anchors used to familiarize BSE were 'West Nile Virus' and 'Severe Acute Respiratory Syndrome,' which were also prominent in the Canadian news. The SARS comparison was paralleled in the public survey, where participants stated that the risk of

BSE in Canada was less risky than the risks of SARS. According to the results of the Alberta survey, the BSE events in Britain were also perceived as more risky than BSE in Canada. However, the British crisis has been different than the Canadian events, as there have been many cases of vCJD in Britain acquired from eating British beef. As there has yet to be a Canadian case of vCJD acquired from eating Canadian beef, it was hypothesized that the risk would be perceived as more dangerous if a case was confirmed in Canada. This was confirmed when the majority of survey participants stated that they would perceive the risk of BSE as higher should there be a case of vCJD.

**Future Areas for Research**

.Three areas that may be studied in the forthcoming years are suggested. First, an additional survey could be administered to delve into the answers of the first Alberta-wide survey to a greater degree. More media questions should be asked, such as the number of times a week the person reads or watches news media, as well as the type of media they prefer to get information about risks. Once the second survey is complete, then cross tabulations may be investigated further to examine the relationship between how the public perceived the risks of BSE and how media portrayed the events.

Second, focus groups could be utilized to better understand the general public's views of BSE. Through focus groups, a better understanding of how individuals consider their own views in the context of others can be gained, and consequently, how these views may be shaped by interaction with others. The primary advantage of utilizing focus groups in this study would be the ability for discussion to expand beyond the preconceptions of the researcher and to provide data about key issues important to group

participants (Morgan & Krueger, 1993; Krueger, 1998; Patton, 2002). It has also been recognized that many individual decisions are made "in a social context that often grows out of discussions with other people" (Patton, 2002, p.385). By utilizing this method, a better understanding could be made of the depth and variation in themes that might have been missed by using surveys alone.

Lastly it is recommended that the potential risk of vCJD in Canada and the implications for future risk communication and risk management be studied in greater depth. In the survey, a question was asked regarding the changing perception of the risk of vCJD if a Canadian case should arise. Further research should be undertaken to examine how perspectives of risk might change and if beef consumption would be affected. This is necessary for risk managers to understand how the risk should be communicated should a case of vCJD arise.

## Next Steps

As this thesis took a published paper model, not all the results could be utilized within the two papers. A number of questions that were asked on the survey will form the basis for another paper. This future paper will discuss the utilization of media content analysis in risk situations. In the past, the utility of content analysis has been studied in communication theory research; however, it has not been well studied in terms of in risk situations. The influence of media in risk communication has been debated theoretically; however its occurrence has been under researched in risk situations (Freudenburg, 1996; Kasperson et al., 2005). The future paper will employ theories utilized in communication research, including priming, framing and agenda setting in order to empirically compare

how people perceived the risk and how the media portrayed it. Price and Tewksbury (1997) have argued that the common theoretical concern linking research on media agenda, priming, and framing is the notion that news reports can alter patterns of knowledge activation.

The open ended question asking what people remembered from media reporting will be coded with the same categories as the media analysis. This portion of the analysis will be guided by framing theory. A frame is defined as the central organizing idea for making sense of events and suggesting what is at issue through the use of selection, emphasis, exclusion, and elaboration (Gamson, 1989; Entman, 1993). It works to shape the audience's interpretations by introducing or raising the apparent importance of ideas to encourage an audience to think, feel, and decide in a particular manner (Entman, 2007; Price et al., 1997; Erbring et al., 1980; Cobb & Elder, 1972).

The primary difference on the psychological level between agenda setting and framing is "the difference between whether we think about an issue and how we think about it" (Scheufele & Tewksbury, 2007, p.11). Using agenda setting theory, the number of newspaper articles will be utilized (as percentages) to explore the salience of the BSE issue. Mazur (1989) found that when media coverage increases so does the negativity of public opinion and as media coverage declines, the public opposition declines as well. This illustrates that public opinion does not seem to turn negative based on the tone of the news story, rather public opinion is more influenced by the amount of news coverage (Mazur, 1989).

Priming will be employed as the theory to understand how the government was portrayed. Priming refers to "changes in the standards that people use to make political

evaluations" (Iyngar & Kinder 1987, p.63) It occurs when news content suggests to news audiences that they ought to use specific issues as benchmarks for evaluating the performances of leaders and government.

## Concluding Remarks

The results of this survey serve to better understand the links between how the general public perceived the risk, how the media portrayed the risk, and the actual, quantifiable economic and health effects of Bovine Spongiform Encephalopathy in Canada. While the consequences have been extensively studied in Canada, the mechanisms behind them have been under researched. For example, it is understood that beef consumption did not decrease. However, the perceptions underlying these decisions were unknown prior to this research. These studies tie together two important aspects of these decisions. The first paper examined how the media, which is a major avenue of information, portrayed the risk. The second paper explored the general public's understanding of BSE and vCJD and revealed that these perspectives mirrored the media analysis. The underlying premises for the observed correlation between public understanding, media portrayal and actual consequences include a trust in government fostered by the media, a history and pride of beef production in Alberta, and how the risk was anchored. Overall this research demonstrates that the general public was well informed of the consequences and risks of BSE through the news media.

## References

Brooks, R. (1999). Newspapers and national identity: The BSE/CJD crisis and the British press. *Media, Culture & Society*, 21, 247-263.

Dornbusch, D. (1998). An analysis of media coverage of the BSE crisis in Britain. In S. C. Ratzan (Ed.), *The Mad Cow crisis.* New York: New York University Press.

Entman, R.M. (2007). Framing bias: Media in the distribution of power. *Journal of Communication*, 57, 163-173.

Erbring, L., Goldenberg, E.N. & Miller, A.H. (1980). Front-page news and real-world cues: A new look at agenda-setting by the media. *American Journal of Political Science*, 24(1), 16-49.

Freudenburg, W.R., Coleman, C-L., Gonzales, J. & Helgemand, C. (1996). Media coverage of hazard events: Analyzing the assumptions. *Risk Analysis*, 16(1), 31-42.

Gamson, W.A. (1989). News as framing. *American Behavioural Scientist*, 32(2), 157-161.

Kasperson, J.X., Kasperson, R.E., Berberian, M. & Pacenka, L.A. (2005). *Social contours of risk.* London: Earthscan.

Kitzinger, J. & Reilly. J. (1997). The rise and fall of risk reporting. *European Journal of Communication*, 12(2), 319-350.

Krueger, R.A. (1998). *Analyzing and reporting focus group results*. Thousand Oaks, CA: Sage Publications.

Mazur, A. (1989). Communicating risk in the mass media. In D. L. Peck (Ed.). *Psychological effects of hazardous waste disposal on communities*. Springfield, IL: Charles Thomas.

Miller, D. (1999). Risk, science and policy: Definitional struggles, information management, the media and BSE. *Social Science and Medicine*, 29, 1239-1255.

Morgan, D.L. & Krueger, R.A. (1993). When to use focus groups and why. In D.L. Morgan (Ed.) *Successful focus groups: Advancing the state-of-the-art.* Newbury Park, CA: Sage Publications.

Patton, M.Q. (1995). *Qualitative evaluation and research methods* (2nd Ed.). Thousand Oaks, CA: Sage Publications.

Price, V., Tewksbury, D. & Powers, E. (1997). Switching trains of thought: The impact of news frames on reader's cognitive responses. *Communication Research.* 24(5), 481-506.

Raude, J., Fischler, C., Lukasiewicz, M.S. & Flahault, A. (2004). GPs and the social amplification of BSE-related risk: An empirical study. *Health, Risk and Society*, 6(2), 173-185.

Scheufele, D.A. & Tewksbury, D. (2007). Framing, agenda setting, and priming: The evolution of three media effects models. *Journal of Communication*, 57, 9-20.

Washer, P. (2005). Representations of Mad Cow Disease. *Social Science and Medicine*, 62, 457-466.

# Appendix A

## Media Analysis Methodology: Uncovering Media Representations

***Instrument***

A media content analysis can provide invaluable insights into prevailing public reactions of risk (Krippendorff, 2004). This portion of the study used a content analysis to examine how print media in Canada framed the BSE crisis. A content analysis can be defined as "a research technique for making replicative and valid inferences from data to their content" (Krippendorff, 1980, p.21). By collecting quantitative data about predefined variables the objective content of messages can be determined (McCormack, 1982, as cited in Altheide, 1996), as described below.

> Content analysis translates frequency of occurrence of certain symbols into summary judgments and comparisons of content of the discourse…whatever "means" will presumably take up space and/or time; hence, the greater that space and/or time, the greater the meaning's significance. (Starosta, 1994, cited in Altheide, 1996, p.36)

The categories consisted of a countable unit, allowing for measurement of the occurrence of categories. Through this method some "categories and variables initially guide the study, but others are allowed and expected to emerge throughout the study, including an orientation toward constant discovery and constant comparison of relevant situations…"(Berg, 1989, cited in Altheide, 1996, p.16).

The comparison of British BSE media coverage to Canadian BSE media coverage was a key point in this study. Categories were chosen to enable comparison between the two representations. Four British BSE overviews and analyses provided the fundamental categories used for the Canadian paper (Brooks, 1999; Dornbusch, 1998; Miller, 1999; Washer, 2005). The categories prevalent in the four studies were used as *a priori* categories in the Canadian BSE media research.

The qualitative approach attempts to look at the deeper meaning behind the news article. Questions such as tone required a more subjective viewpoint to understand if the story was more negative or positive in nature. As Manning and Cullum-Swan (1994) suggest "The interpretant, perspective, or standpoint of the observer from which the system is constructed must be identified in social and cultural context" (p.470). To place meaning to context suggests that it is necessary to understand the context in which it is created (Altheide, 1996). As stated previously, some categories were used because they were common categories within the British media representations of the BSE events. However, there were some categories present in the Canadian newspapers that were only common to the Canadian BSE crisis. These included the anchors that were used to compare the Canadian example to other diseases occurring at the same time. As stated in the procedure below, categories such as definitions and control actions were used because they were prominent frames within Canadian news stories. In this manner both quantitative and qualitative methods were applied to the content analysis. Quantitative allowed for an objective categorization of news articles and qualitative was necessary to determine the context of the text.

***Sample***

Newspaper articles were examined following the "first 10 days" of the initial discovery of a cow with BSE in Alberta, Canada on May 20, 2003. This time period is based on the premise that initial stories establish a common heuristic or 'trigger' that the public may use to reinforce and make sense of subsequent reporting of the same issue over time and multiple occurrences (Frewer, 1993 and 1999). These heuristics can affect

how events are recalled in future media representations. The method of using snapshots in time has been used by researchers such as Washer (2005) to sample media representations of BSE. Through using this method, it is assumed that unless there is another major development in the risk event, journalists will continue to use these initial frames to describe future news stories. This method has been tested by comparing the first 10 days of news reporting of both BSE in Canada and another Canadian risk event (the *E. coli* drinking water contamination in Walkerton, Ontario) to a full year of reporting. The results, which are reported elsewhere, demonstrate that this is a representative and valid way to sample newsprint media when the news issue remains constant over time (Driedger et al., submitted). Secondly, the "first 10 days" following subsequent confirmed Canadian cases were analyzed to determine if coverage changed in these later media articles.

The newspapers included in this study were: (1) two leading national newspapers, *The Globe and Mail* and *The National Post*; (2) two regional Alberta newspapers, *The Edmonton Journal* and *The Calgary Herald*; and (3) one local Alberta newspapers *The Lethbridge Herald* (Lethbridge has strong local ties to the beef industry and has an independently owned newspaper). The articles were chosen by using keywords (BSE, Mad Cow and vCJD). A selection process based on specified inclusion/exclusion criteria was then used to determine if they would be included in the analysis. Articles were included if they addressed one of four questions:

1. Is the story reflective of the BSE crisis? (If yes, keep story).
2. Does the article use BSE as a comparable event to another unrelated event, or compares BSE to the possible cause of another crisis? (If yes, keep story).

3. Is the story about plans or government responses to the BSE event in terms of changes in policy, funding procedures or other economic or health care policies? (If yes, keep story).
4. Does the story articulate the BSE crisis in another country? (If yes, keep story).

News articles that only mentioned BSE in a cursory manner but were not the main focus of the story were eliminated. Also, letters to the editor were not included as readers may differentiate these sources from regular editorials and news sections.

***Procedure Development***

Weber (1990) defines a content analysis as a "research method that uses a set of procedures to make valid inferences from text" (p.9). For the research completed here, procedures and categories were developed using four steps (adapted from Altheide, 1996):

(1) Became familiar, to point of saturation, with the content of relevant articles, noting in particular emerging themes and categories. The unit of analysis was individual articles.

(2) Listed several themes and categories to guide collection, and drafted a procedure.

(3) Tested the protocol by collecting data from several documents (see data verification section).

(4) Revised the procedure and selected several additional cases to redefine the protocol. Notes were made for every article that fell under the *other* category. This provided reference points that aided in determining emerging categories. An analysis was performed for every 20 articles, where the data were re-examined to

allow for emergence, refinement or collapsing of categories. This re-examination rate met the acceptable levels provided by Altheide (1996). A re-examination was also conducted each time interval a new case of BSE was found.

The sampling unit (i.e., news story) was analyzed in two ways. First if the sampling unit had multiple references to the same category, the content theme was counted only once per theme. There could be multiple categories in each sampling unit (e.g., blame and government). This constitutes the *mention* results described later. Secondly, a main category was chosen for each sampling unit. In this analysis only one category could exist in each article. Fortunately, in the BSE case most articles had a clear main topic, although this was one of the more subjective analyses in the research.

*A priori* codes were developed through an extensive BSE literature review. Since the comparison of British BSE media to Canadian BSE media was a key point in this study, categories were chosen to accurately compare and contrast the two representations (Brooks, 1999; Dornbusch, 1998; Miller, 1999; Washer, 2005). These four studies provided the fundamental categories utilized for the Canadian paper. While the media analyses conducted in the two countries cannot be directly compared based on methods alone, the theories and outcomes of the research can be used to compare events in both countries. The articles were categorized by: 1) *health* (i.e., describing some aspect of the human physical well being or possible human safety concerns); 2) *government* (i.e., articles that discuss the government or governing members as well as mentions of specific actions or policies that the government is responsible for); 3) *blame* (i.e., someone or something is being assigned fault or responsibility); 4) *mistrust* (i.e., an

article that demonstrates a lack of confidence in a person, thing or idea); 5) *definitions* (i.e., defining or explaining a certain aspect of BSE); 6) *descriptions* (i.e., explaining what has happened or an account of something); 7) *control actions* (i.e., describing how the crisis was controlled or describing how the events or disease is under control); 8) *economy* (i.e., the overall monetary/economic wellbeing of the country); and 9) *other* (i.e., does not fall into any of the above categories). As the economy category had a large proportion of articles, it was then sub-categorized by *trade* (i.e., where the article describes how BSE was affecting the exchange of goods between Canada and other countries); *plight of farmers* (i.e., where farmers and ranchers were described as having a hard time with BSE or farm related events); *affect other industry* (i.e., where focus was on how BSE was impacting other industries); or *the general economy* (i.e., how BSE affected the overall monetary wellbeing of the Canadian economy).

***Data Recording***

Newspaper articles were collected from online sources utilizing: (1) Canadian Newsstand for *The Globe and Mail*, *The National Post*, *The Edmonton Journal* and *The Calgary Herald*; (2) Virtual News Library for *The Lethbridge Herald*. Once all suitable newspaper articles were found, articles were transferred to Microsoft Word for searching and analyzing. The results of the analyses were recorded in Microsoft Excel for ease of interpretation.

***Data Verification***

Data verification consisted of an inter-coder reliability test. Weber notes: "reliability problems usually grow out of the ambiguity of word meanings, category definitions, or other category rules" (1990, as cited in Stemler, 2006, p. 5). Inter-reliability or stability was tested by having the principal investigator and another coder independently categorize a sample of 40 articles. In addition, selections of story category recording units were rated independently by both the principal investigator and another coder. A 90% agreement was achieved. This method of reliability testing mirrors that reported by Driedger (2007) and the reliability rate meets the acceptable levels identified by Miles and Huberman (1994).

***Planned Data Analysis and Interpretation***

To understand how the BSE crisis was framed, the categories and themes were analysed to quantitatively compare and contrast the media representations over time and across newspaper locations. The categories were analysed statistically to determine measurable results. These statistics included frequencies, ranges, means and medians. The results were illustrated in graphs and charts to help visually demonstrate how the media portrayed the events of the Canadian crisis and to determine what themes occurred most frequently. Quotes were extracted from articles and added to the paper to serve as examples of how the categories were framed.

It was not possible to directly compare the British BSE media research to the Canadian BSE media research. These events resulted in different reactions and consequences from public and policy makers as described in chapter 1 and 2; hence there

were understandably some uncommon themes between the two crises. However, it was possible to evaluate the outcomes and general theories of the research completed on media representations in Britain in order to compare any similarities or differences in the crises. For example, consequences to human health were a prominent category in British news stories. This was compared to consequences to the economy which was a prominent category in Canadian news stories. While it was not feasible to compare each category quantitatively, the relative prominences of different media representations were used as a comparison between the two countries news reporting. These results were necessary to form the basis of the Alberta wide survey, which is discussed in Appendix B.

## References


Altheide, D. L. (1996). *Qualitative media analysis*. Thousand Oaks, CA: Sage Publications.

Brooks, R. (1999). Newspapers and national identity: The BSE/CJD crisis and the British press. *Media, Culture & Society,* 21, 247-263.

Dornbusch, D. (1998). An analysis of media coverage of the BSE crisis in Britain. In S. C. Ratzan (Ed), *The Mad Cow crisis*. New York: New York University Press.

Driedger, S. M. (2007). Risk and the media: A comparison of print and televised news stories of a Canadian drinking water risk event. *Risk Analysis,* 27(3),775-786.

Driedger, S.M., Jardine, C.G., Boyd, A.D., & Mistry, B. (Submitted). Do the first 10 days equal a year? Comparing two Canadian public health risk events using the national media. *Health, Risk and Society*.

Frewer, L.J., Raats, M.M., & Shepherd, R. (1993). Modeling the media: The transmission of risk information in the British quality press. *IMA Journal of Mathematics Applied in Business and Industry,* 5, 235-247.

Frewer, L.J. (1999). Public risk perceptions and risk communication. In P. Bennett & K. Calman (Eds.), *Public communication and public health.* (p.20). Oxford: University Press.

Krippendorff, K. (1980). *Content analysis: An introduction to its methodology.* Newbury Park, CA: Sage Publications.

Krippendorff, K. (2004). *Content analysis: An introduction to its methodology.* (2nd ed.)., Thousand Oaks, CA: Sage Publications.

Manning, P.K., & Cullum-Swan, B (1994). Narrative, content, and semiotic analysis. In N.K. Denzin & Y.S. Lincoln (Eds.), *Handbook of qualitative research..*Thousand Oaks, CA: Sage Publications.

Miles, M. B. & Huberman, A.M. (1994). *Qualitative data analysis: An expanded sourcebook.* London: Sage Publications.

Miller, D. (1999). Risk, science and policy: Definitional struggles, information management, the media and BSE. *Social Science and Medicine*, 29, 1239-1255.

Stemler, S. (2001) Practical assesment research and evaluation. Retrieved October 10, 2006, from http://pareonline.net/getvn.asp?v+7&n=17

Washer, P. (2005). Representations of Mad Cow Disease. *Social Science and Medicine* 62, 457-466.

Weber, R. P. (1990). *Basic content analysis,* (2nd ed.). Newbury Park, CA: Sage Publications.

# Appendix B

## Alberta Survey: Examining Public Perceptions of BSE and vCJD

***Instrument***

The second component of the study involved exploring the perspectives of a representative sample of Albertans through the Alberta Survey - an annual provincial telephone survey administered by the Department of Sociology, University of Alberta, through its research facility, the Population Research Laboratory (PRL). The PRL provided the information on the survey methodology that is utilized in this section (Kennedy and Werner-Leonard, 2007). The major benefit of the Alberta Survey is that it allows for the collection of high quality data from a sizable provincial sample. The purpose of this survey was to produce numerical descriptors on how the general public perceived the risks of BSE in Canada and how the media portrayed the risks and events.

The Alberta Survey consisted of various client sponsored questions, as well as socio-demographic variables including age, gender, marital status, highest level of education, household income, individual income, religion, ethnicity, country of birth, employment status, occupation, home ownership, voting preference in provincial and federal elections and sample area in Alberta. Clients consisted of academic researchers, government departments, and non-profit organizations who wished to explore a wide range of research topics in a structured framework. Topics in the 2007 survey included cell phone use and driving, lifestyle activities, AADAC (Alberta Alcohol and Drug Abuse Commission) performance measures, Alberta's economy, children's hockey injury prevention, migration and fertility, food safety, post-secondary education and employment, mental illness and stigma and Mad Cow Disease risks. Only responses on Mad Cow Disease were provided back to the researchers in this study for analysis.

***Sample***

The 2007 Alberta Survey was conducted between March and May 2007. The target participant population for telephone interviewing was persons 18 years of age or older who, at the time of the survey, were living in Alberta and could be contacted by direct dialing. From this population, three samples were drawn to analyse the province of Alberta, including the Edmonton metropolitan area, Calgary metropolitan area, and the rest of the province ("other" Alberta). The Alberta population was chosen for two reasons. First, an objective of the study was to compare the newsprint media to the general public's risk perspectives. As Alberta was the focus of the media analysis, it was also necessary to select Alberta as the province to survey. Second, Alberta had the greatest number of cattle producers in Canada and therefore it was believed that BSE was largely an Albertan concern (Mitura and Pietro, 2004).

The objective was to sample approximately 400 people from each of the areas to make a total sample size of approximately 1200 people. In actuality there were 403 people sampled from the Edmonton metropolitan area, 402 from the Calgary metropolitan area and 402 from the rest of the province ("other" Alberta), for a total sample size of 1207 people. Survey estimates for the area sub-sample of 400 were estimated to be within ±5%, at the 95% confidence level. A Random-Digit Dialing approach was used to ensure that respondents had an equal likelihood to be contacted whether or not their household was listed in a telephone directory. In each household only one eligible person was selected to be the respondent. The survey selectively targeted an equal number of males and females, and took an average of 31.4 minutes to complete.

***Protocol and Questions***

The survey instrument consisted of: (1) a standardized introduction; (2) questions from sponsors as described previously; and (3) demographic questions. The survey was administered through a multi-station CATI (Computer-Assisted Telephone Interviewing) system installed on a local area network at the Population Research Lab. The Ci3 Wincati System is a PC-Windows based product created by Sawtooth Software, Northbrook, Illinois. This system facilitates the exchange of information among interviewing PC stations and supervisor stations linked using a file and database server during the data collection period. Interviewers keyed in responses directly into the program, therefore it was possible to continually monitor close-ended responses. Interviews were conducted between the hours of 9:00 a.m. to 3:00 p.m. and 4:00 p.m. to 9:00 p.m., Mondays to Fridays, 10:00 a.m. to 4:00 p.m. Saturdays, and 11:00 a.m. to 9:00 p.m. Sundays. If there was no contact established on the first call, a minimum of 10 call back attempts were made before declaring a telephone number as "no contact."

Questions were based on both the media content analysis and literature. Major themes that arose from these contexts formed the basis for questions (See Appendix C) to explore actual understanding of public knowledge and understanding of BSE related risks. Although all of the questions listed in Appendix C were asked in the Alberta survey, questions about the change in provincial and federal government trust and the tone of media reporting will not be reported in this thesis (although they will form the basis for a paper to be written at a later date). The survey questions and protocol were

approved by the Faculties of Arts, Law and Science Research Ethics Board before it was administered to the public.

***Data Verification***

Supervisors monitored call dispositions, validated data and generated progress reports. Statistical validity was ensured through careful selection of design and questions as well as adequate pre-testing (Black, 2002). Construct validity was ensured through pre-testing the surveys to determine effectiveness (Black, 2002). The questionnaire was pre-tested on 20 Edmonton area households by professional interviewers. Based on the findings of the pre-test, modifications were made to the questionnaire before the survey was actually conducted. In total 10% of respondents were re-contacted by telephone supervisors for interviewing validation.

***Data Recording***

The data was tabulated and cleaned using SPSS for Windows statistical package version 15 (a product of SPSS Inc., Chicago, Illinois). The data cleaning process included wildcode and discrepant values, referring to replies that were outside of the response set or incompatible with other responses. After each telephone survey, responses were coded numerically into response categories provided by the researcher. Response categories were generated using Likert scales. The number of possible responses was dependent on the question asked (See Appendix C). This approach is consistent with previous risk perception research (Slovic et al., 1993; Slovic et al., 1995). The open ended responses were merged into an SPSS spreadsheet where they were coded

using the same procedure as the media analysis. Quotes were extracted to be used in Chapter Three.

***Planned Data Analysis and Interpretation***

In addition to the raw data, the Population Research Lab provided frequency distributions, selected cross-tabulations, and a technical sampling report. The results were analyzed and interpreted both by survey area and as a combined single sample. The three sample areas were weighted in proportion to the Alberta population represented by each. The results were graphed to demonstrate comparisons within categories.

**References**


Black, T.R. (2002). *Understanding social science research* (2nd ed.). Thousand Oaks, CA: Sage Publications.

Caplan, P. (2000). Eating British beef with confidence: A consideration of consumers' responses to BSE in Britain. In *Risk revisited*, Ann Arbor, MI: University of Michigan Press. http://www.site.ebrary.com/lib/doc?id=2001133.html (accessed November 2, 2006).

Kennedy, T., & Werner-Leonard, A. (2007). *The 2007 Alberta survey sampling report.* (Prep. For the Population Research Lab) University of Alberta: Edmonton.

Mitura, V., & Pietro, L. (2004, June*). Canada's beef cattle sector and the impact of BSE on farm family income* (Publication No. 21-601-MIE-No.069). Retrieved November 24, 2006, from Statistics Canada Access: http://www.statcan.gc.ca/english/research/21-601-MIE/21-601-MIE2004069.pdf

Slovic, P., Flynn, J., Mertz, C.K. & Mullican, L. (1993). *Health-risk perception in Canada*, (Prep. for the Dept. of National Health and Welfare by Decision Research. Rept. 93-EHD-170).

Slovic, P., Malmfors, T., Krewski, D., Mertz, C.K., Neil, N., & Bartlett, S., (1995) Intuitive toxicology II. Expert and lay judgments of chemical risks in Canada, *Risk Analysis*, 15(6), 661-676.

Washer, P. (2006). Representations of mad cow disease. *Social Science & Medicine* 62(2), 457-466.

# Appendix C

Telephone Survey Questions

| Variable Name | Question | Key | Routing Skips |
|---|---|---|---|
| INTRO1 | Hello, my name is _____ and I'm calling (long distance) from the Population Research Laboratory at the University of Alberta.<br><br>I have dialed XXX-XXXX, is that correct? Your telephone number was selected at random by computer.<br><br>T:14<br><br>Hello, I am calling back from the Population Research Laboratory to continue an interview that we started previously. | Continue..... | |
| INTRO2 | The Lab is currently conducting an important study of public opinion on a variety of topics.<br><br>(OPTIONAL READ: The topics included in the survey range from cell phone use, lifestyle activities, the economy, children's hockey, migration and fertility, food safety, education and employment, mental illness and Mad Cow Disease.)<br><br>The survey information will assist with decision-making in developing public policies and support the work of university researchers and educators.<br><br>(OPTIONAL READ: The study sponsors are Capital Health, four departments from the University of Alberta, the Society of Edmonton Demographers, the Population Research Laboratory and a government agency.) | Continue..... | |
| NUMMEN | To ensure that we speak to a good cross-section of people in Alberta, can you please tell me the following:<br><br>How many men aged 18 or over live at this number? | Number of men<br><br>Refused..... | |
| NUMWOM | And how many women aged 18 and over live at this number?<br><br>[Interviewer instruction: If no one 18 years or older lives in the household, terminate the interview. Select a household respondent according to the standardized respondent selection guidelines.]<br><br>(Optional: "We don't always speak to the person who answers the phone. For this interview, I would like to speak to an adult member of the household who is 18 years or older. May I speak to the male/female who is available?" Repeat intro if necessary.) | Number of women<br><br>Refused ..... | |

| | | |
|---|---|---|
| VERIFY18 | And just to confirm, are you 18 years of age or older?<br><br>(Ask to speak to ADULT member of household:<br><br>"We don't always speak to the person who answers the phone. For this interview, I would like to speak to an adult member of the household who is 18 years or older. May I speak to the male/female who is available?" Repeat intro if necessary.) | Yes, 18 years or older 1<br>No, Underage.....2 |
| INTRO3 | I would like to interview you and I'm hoping that now is a good time for you. The interview will take approximately 25-30 minutes, or less, depending on which questions apply to you.<br><br>Your opinions will provide valuable information for researchers at the University of Alberta.<br>May we proceed with the interview now? | Yes.....1<br>No.....schedule callback or terminate appropriately |
| FOIPP | Before we start, I would like to assure you that your participation in this interview is completely voluntary. If there are any questions you don't wish to answer, please point these out to me and we'll go on to the next question. You, of course, have the right to end this phone call at any time. The information you provide will be used only for the indicated purposes in conformity with the Alberta Freedom of Information and Protection of Privacy (FOIPP) act.<br><br>If you have any questions about this study, you can call Tracy Kennedy, Research Coordinator, at the Population Research Lab (collect) at (780) 492-4659, ext. 233. | Continue .....1 |
| STRATA | Location | Metropolitan Edmonton..1<br>Metropolitan Calgary.....2<br>Other Alberta.....3 |
| SEX1 | Interviewer: Record sex of respondent (don't ask unless you need to!) | Male.....1<br>Female .....2 |
| PRIMARY$ | Quota distribution | Metro Edmonton Male....1<br>Metro Edmonton Female 2<br>Metro Calgary Male.....3<br>Metro Calgary Female.....4<br>Other Alberta Male.....5<br>Other Alberta Female .....6 |
| TIME | [Interviewer note: Start timing now] | Continue .....1 |

| | Mad Cow Disease in Alberta | |
|---|---|---|
| I1 | This section explores Mad Cow Disease (also known as BSE) in Canada and potential risks.<br><br>In May 2003, a cow in Alberta was found to have Mad Cow Disease, also known as BSE. This was a significant event in this province with extensive news coverage.<br><br>What was *one major thing* you remember about this event from the news?<br><br>[If asked to clarify BSE say: BSE, or Bovine Spongiform Encephalopathy is a disease affecting animal brain protein.] | Open-ended |
| I2a | Based on what you know and understand about Mad Cow Disease, we would like your opinion on the potential impact of this event on various subjects, such as the economy, or cattle ranchers.<br><br>Please rate the following questions on a scale of risk level, where '1' means 'no risk at all' and '5' means 'a very large risk'.<br><br>Finding Mad Cow Disease here presented how much risk in terms of its potential impact on...<br><br>…the Canadian economy? | 1……..No risk at all<br>2……..<br>3……..<br>4……..<br>5……..A very large risk<br><br>Don't Know ..... 8<br>No Response ..... 9 |
| I2b | [OPTIONAL READ: Finding Mad Cow Disease here presented how much risk in terms of its potential impact on...]<br><br>…the Alberta economy? | 1……..No risk at all<br>2……..<br>3……..<br>4……..<br>5……..A very large risk<br><br>Don't Know ..... 8<br>No Response ..... 9 |
| I2c | [OPTIONAL READ: Finding Mad Cow Disease here presented how much risk in terms of its potential impact on...]<br><br>…individual Alberta farmers? | 1……..No risk at all<br>2……..<br>3……..<br>4……..<br>5……..A very large risk<br><br>Don't Know ..... 8<br>No Response ..... 9 |

| | | |
|---|---|---|
| I2d | [OPTIONAL READ: Finding Mad Cow Disease here presented how much risk in terms of its potential impact on...<br><br>...the future of family-owned farms in Alberta? | 1.....No risk at all<br>2.....<br>3.....<br>4.....<br>5.....A very large risk<br><br>Don't Know..... 8<br>No Response ..... 9 |
| I2e | [OPTIONAL READ: Finding Mad Cow Disease here presented how much risk in terms of its potential impact on...]<br><br>...the possible health effects on people who consume Alberta beef? | 1.....No risk at all<br>2.....<br>3.....<br>4.....<br>5.....A very large risk<br><br>Don't Know..... 8<br>No Response ..... 9 |
| I3a | Now, we want to know if the 2003 event changed your trust level in the ability of government to handle this type of situation.<br><br>Please answer these questions on a five-point scale where 1 means 'your trust has greatly decreased', 3 means 'no change' and 5 means 'your trust has greatly increased'.<br><br>How did your trust of the Alberta (or provincial) government change? | 1.....Trust greatly decreased<br>2.....<br>3.....No change<br>4.....<br>5.....Trust greatly increased<br><br>Don't Know..... 8<br>No Response ..... 9 |
| I3b | How did your trust of the Canadian (or federal) government change? | 1.....Trust greatly decreased<br>2.....<br>3.....No change<br>4.....<br>5.....Trust greatly increased<br><br>Don't Know..... 8<br>No Response ..... 9 |
| I4a | We would now like to know how you compare the risk of Mad Cow Disease in Alberta relative to other health risk events.<br><br>Rate these questions on a five-point scale where 1 means 'a lost less risky', 3 means 'the risks are about equal' and 5 means 'a lot more risky'.<br><br>How would you compare the risk of Mad Cow Disease in Canada relative to...<br><br>...SARS in Canada? (Severe Acute Respiratory Syndrome) | 1..... A lot less risky<br>2.....<br>3.....Risks are about equal<br>4.....<br>5.....A lot more risky<br><br>Don't Know..... 8<br>No Response ..... 9 |

| | | |
|---|---|---|
| I4b | [OPTIONAL READ: How would you compare the risk of Mad Cow Disease in Canada relative to...]<br><br>...Avian Influenza in Canada? (Bird Flu Virus) | 1..... A lot less risky<br>2.....<br>3.....Risks are about equal<br>4.....<br>5.....A lot more risky<br><br>Don't Know..... 8<br>No Response..... 9 |
| I4c | [OPTIONAL READ: How would you compare the risk of Mad Cow Disease in Canada relative to...]<br><br>...The Mad Cow Disease event in Britain? | 1..... A lot less risky<br>2.....<br>3.....Risks are about equal<br>4.....<br>5.....A lot more risky<br><br>Don't Know..... 8<br>No Response..... 9 |
| I5 | Rate this question a five-point scale where 1 is 'very negative', 3 is 'neutral' and 5 is 'very positive'.<br><br>How did you feel the media portrayed the events related to Mad Cow Disease in Canada? | 1.....Very negative<br>2.....<br>3.....Neutral<br>4.....<br>5.....Very positive<br><br>Don't Know..... 8<br>No Response..... 9 |
| I6 | On a five-point scale with 1 being 'no risk at all' and 5 being 'a very large risk', what do you think the *overall* risk of Mad Cow Disease is in Canada? | 1.....No risk at all<br>2.....<br>3.....<br>4.....<br>5.....A very large risk<br><br>Don't Know..... 8<br>No Response..... 9 |
| I7 | In this final question on Mad Cow Disease, I would like to know if your assessment of the *overall* risk might change if conditions changed.<br><br>In the United Kingdom, there have been 158 human deaths attributed to variant Creutzfeld Jacob Disease, which is the human equivalent of Mad Cow Disease. In Canada there has only been one death from this disease. It was shown that this person was probably exposed to the disease while in the United Kingdom.<br><br>If, in the future there is human death from this disease in Canada that can be shown to be caused from eating Canadian beef, would your assessment of the *overall risk* (of Mad Cow Disease) be...?<br><br>[READ LIST: Select one] | 1.....The same as it is now<br>2.....Slightly higher than it is now<br>3.....A lot higher than it is now<br><br>Don't Know..... 8<br>No Response..... 9 |
| | Respondent and Household Section | |
| K1a | The next questions will give us a better picture of the Albertans who took part in this study. The first | Yes, paid job..... 1<br>Yes, self employed ..... 2 |

| | | |
|---|---|---|
| | questions are about employment.<br><br>Do you presently have a paid job or are you self employed? (READ) | Yes, paid job & self employed ..... 3<br>No, neither ..... 4<br><br>No Response ..... 0 |
| K1b | Are you currently unemployed, that is, out of work and LOOKING for work? | Yes ..... 1<br>No ..... 2<br><br>No Response ..... 0 |
| K1c | Are you retired? | Yes ..... 1<br>No ..... 2<br><br>No Response ..... 0 |
| K1d | Are you employed full-time? | Yes ..... 1<br>No ..... 2<br><br>No Response ..... 0 |
| K1e | Are you (also) employed part-time? | Yes ..... 1<br>No ..... 2<br><br>No Response ..... 0 |
| K2a | What kind of work do/did you normally do? That is, what is/was your job title?<br>(Interviewer notes):<br>1. Do Not Leave Blank!<br>2. If the respondent has NEVER worked in a paid job in his/her lifetime, type in response, e.g. Student never worked or Homemaker never worked.<br>3. If respondent has more than one job, ask about the job that they work the most hours in.<br><br>*Code four digits from the National Occupational Classification (NOC) 2001.*<br>*Human Resources Development Canada*<br><br>*Web site: http://www23.hrdc-drhc.gc.ca/2001/e/generic/welcome.shtml*<br><br>(Codes 0, 28, 29 added specifically for this study and not part of the National Occupational Classification)<br>0 – No Response<br>28 – Homemaker, never worked<br>29 – Student, never worked | Open-ended |

| | | |
|---|---|---|
| Kwork | K2a was recoded in accordance with the two-digit NOC major group structure. See Appendix A for the Major Group Structure inserted into the SPSS data set. | |
| K2b | What does/did that job involve? (Describe)<br>Interviewer note: Do not leave blank! | Open-ended |
| K2c | What kind of business or organization do/did you work for?<br>What does/did your employer do or make?<br><br>Interviewer note: Do not leave blank!<br><br>Code from the North American Industry Classification System (NAICS) 2002, Statistics Canada.<br><br>0 – No Response<br>99 – Not Applicable | Open-ended |
| Kindustry | K2c was recoded in accordance with the two-digit NAICS industry sector. See Appendix B for the Industry Sector inserted into the SPSS data set. | |
| K3a | Including yourself, how many ADULTS live at this number (related to you or not)? | # of Adults 18+_____<br><br>No Response..... |
| K3b | ...and how many CHILDREN under the age of 18 (live at this number)? | # of Children under 18 _____<br><br>No Response..... |
| K3c | That is a total of ___ people in the household, right?<br>[Interviewer note: enter the total number of people.] | # of people_____ |

| | | |
|---|---|---|
| Age | QK4. What is your age? | _____ Years Old<br><br>No Response.....99 |
| Agex | Age Grouped (Computed Variable) | 18-24.....1<br>25-34.....2<br>35-44.....3<br>45-54.....4<br>55-64.....5<br>65 and over .....6<br>No Response.....0 |
| K5a | What is your CURRENT marital status? (READ) | Never Married (Single)<br>Married .....2<br>Common-Law<br>Relationship /Live-In<br>Partner .....3<br>Divorced .....4<br>Separated .....5<br>Widowed .....6<br><br>No Response.....0 |
| K5b | What was your marital status before your present relationship? Were you (READ) | Never Married (Single)<br>Married .....2<br>Common-Law<br>Relationship /Live-In<br>Partner .....3<br>Divorced .....4<br>Separated .....5<br>Widowed .....6<br><br>No Response.....0 |
| K6 | What is your highest level of education?<br>(This includes complete and incomplete)<br>(DO NOT READ) | No Schooling.....1<br>ELEMENTARY<br>Incomplete.....2<br>Complete .....3<br>JUNIOR HIGH<br>Incomplete.....4<br>Complete .....5<br>HIGH SCHOOL<br>Incomplete.....6<br>Complete .....7<br>COLLEGE/<br>TECHNICAL<br>INSTITUTE<br>(non-University)<br>Incomplete.....8<br>Complete .....9<br>UNIVERSITY<br>Incomplete.....10<br>Diploma/certificate 11<br>Bachelor's Degree..12<br>Professional Degree<br>(vets, doctors, dentists,<br>lawyers) .....13<br>Master's Degree.....14 |

| | | |
|---|---|---|
| | | Doctorate ..... 15<br>No Response..... 0 |
| K6Group | Education Grouped (Computed Variable) | Less than High School<br>High School Complete<br>Post-Secondary..... 3<br>No Response..... 0 |
| K7 | In total, how many years of schooling do you have? (This includes the total of grade school, high school, vocational, technical and university.) | ____ Years of Schooling<br><br>No Response..... 98 |
| K8a | What is your religion, if any?<br>(Probe with categories if necessary)<br><br>(A: ANY PARTICULAR DENOMINATION?)<br>(B: ANY PARTICULAR DENOMINATION?)<br>(C: ANY PARTICULAR SECT?)<br><br>(NOTE: Other includes other faiths, i.e., Hindu, Buddhism, Baha'i, Wicca, Native Spirituality, etc) | No Religion (Including agnostic and atheist) ..... 1<br>Anglican ..... 2<br>Baptist..... 3<br>Greek/Ukrainian Orthodox..... 4<br>Jewish ..... 5<br>Lutheran..... 6<br>Mennonite..... 7<br>Latter Day Saints (Mormon) ..... 8<br>Pentecostal..... 9<br>Presbyterian ..... 10<br>Roman Catholic ..... 11<br>Ukrainian Catholic (Incl. Greek Catholic)<br>United Church ..... 13<br>Sunni (Sunni Islam)<br>Shiite (Shia Islam) . 15<br>Protestant-Not on list*A ..... 16<br>Christian unspecified*B ..... 17<br>Islam*C ..... 18<br>Other (Specify) ..... 19<br><br>No Response..... 0 |
| K8b | Using a 7-point scale where 1 is 'Strongly Disagree' and 7 is 'Strongly Agree', please tell me how much you agree or disagree with the following statement.<br><br>I would describe myself as religious. | Strongly disagree ... 1<br>Disagree..... 2<br>Disagree Somewhat3<br>Neutral ..... 4<br>Agree Somewhat ... 5<br>Agree ..... 6<br>Strongly Agree..... 7<br><br>Don't Know..... 8<br>No Response..... 0 |
| K9 | To which ethnic or cultural group(s) did your ANCESTORS belong?<br><br>(Specify up to four groups. For example, French, English, Spanish, Chinese, etc. If respondent says Canadian, record their response and ask what country | See Appendix C for list of ethnicities and missing values |

| | | |
|---|---|---|
| | their ancestors came from) | |
| K10 | Would you say that you (and your family) are BETTER OFF, just the SAME, or WORSE OFF financially than you were a year ago? | Better Off.....1<br>Just the Same.....2<br>Worse Off.....3<br><br>Don't Know.....8<br>No Response.....0 |
| K11 | Now looking ahead, do you think that a YEAR FROM NOW, you (and your family), will be BETTER OFF, just about the SAME, or WORSE OFF financially than now? | Better Off.....1<br>Just the Same.....2<br>Worse Off.....3<br><br>Don't Know.....8<br>No Response.....0 |
| K12a | What is the TOTAL income of ALL members of this HOUSEHOLD for the past year, BEFORE taxes and deductions? We are just looking for a ballpark figure.<br><br>(NOTE: Probe with categories as examples if needed.) | Under $6,000.....01<br>6,000-7,999.....02<br>8,000-9,999.....03<br>10,000-11,999.....04<br>12,000-13,999.....05<br>14,000-15,999.....06<br>16,000-17,999.....07<br>18,000-19,999.....08<br>20,000-21,999.....09<br>22,000-23,999.....10<br>24,000-25,999.....11<br>26,000-27,999.....12<br>28,000-29,999.....13<br>30,000-31,999.....14<br>32,000-33,999.....15<br>34,000-35,999.....16<br>36,000-37,999.....17<br>38,000-39,999.....18<br>40,000-44,999.....19<br>45,000-49,999.....20<br>50,000-54,999.....21<br>55,000-59,999.....22<br>60,000-64,999.....23<br>65,000-69,999.....24<br>70,000-74,999.....25<br>75,000-79,999.....26<br>80,000-84,999.....27<br>85,000-89,999.....28<br>90,000-94,999.....29<br>95,000-99,999.....30<br>100,000-124,999....31<br>125,000-149,999....32<br>150,000+.....33<br><br>Don't Know.....34<br>No Response.....35 |

| | | |
|---|---|---|
| K12b | What was your own total INDIVIDUAL income for this past year BEFORE taxes and deductions? Again, we are just looking for a ballpark figure.<br><br>[NOTE: Probe with categories as examples if needed.] | Same as K12a |
| K13 | Do you (or your spouse/partner/parents) presently own or rent your residence?<br><br>[NOTE: If respondent lives in parents' home and they own it, put 'own' for respondent too.] | Own .....<br>Rent .....<br><br>No Response..... |
| K14 | Do you presently live in: (READ) | A City .....<br>A Town.....<br>A Village .....<br>A Rural Area.....<br><br>No Response..... |
| K15 | Do you live on a farm? | Yes.....<br>No.....<br>No Response.....<br>Don't Know..... |
| K16a | For this next question, please tell me: If an election was held today, how would you vote federally?<br><br>(Do not read categories. Probe for the name of a political party) | Liberal Party of Canada (Liberals) .....<br>Conservative Party of Canada (PC or Tory /Alliance) .....<br>New Democratic Party (NDP) .....<br>Green Party of Canada....<br>Other (specify).....<br><br>Would not vote .....<br>Not Eligible .....<br>Don't Know.....<br>No Response..... |
| K16b | If an election was held today, how would you vote provincially?<br><br>(Do not read categories. Probe for the name of a political party) | Progressive Conservative (PC/Tory).....<br>Alberta Liberal Party (Liberals) .....<br>Alberta New Democrats (NDP) .....<br>Alberta Alliance Party ....<br>Alberta Party.....<br>Alberta Greens.....<br>Separation Party of Alberta .....<br>Alberta Social Credit Party (Socreds) .....<br>Communist Party.....<br>Other (Specify .....<br><br>Would not vote .....<br>Not Eligible ..... |

| | | |
|---|---|---|
| | | Don't Know.....<br>No Response..... |
| K17 | To ensure that we have reached people from all areas of the province, may I please have your postal code?<br><br>(NOTE: Enter the complete postal code. It should start with a capital "T".<br>(e.g. T5N 2B3, T6K 0R5, T0E 7Z2) | Open-ended<br><br>Enter Complete Postal Code __<br><br>Don't Know or No Response [T99] |
| BLAST | We've reached the end of the interview. Thank you very much for your time and participation. | Continue ..... |
| | **TO BE COMPLETED BY THE INTERVIEWER** | |
| LENGTH | Please enter the length of the interview | Open-ended |
| SEX2 | Enter sex of respondent<br>(Interviewer Note: This should be the same as SEX1.) | Male.....<br>Female ..... |
| SEX3 | Please type in "him" or "her" to indicate the sex of the respondent you just interviewed. | Open-ended |
| DECLARE | I declare that this interview was conducted in accordance with the interviewing and sampling instructions given by the Population Research Laboratory at the University of Alberta. I agree that the content of all respondents' comments and answers will be kept confidential. | Numeric |
| ENDQ | Go back through the questionnaire for your final edit before recording it as complete.<br><br>Please ensure you edit all responses.<br>Once you have finished editing your responses, press '1' to code as complete. | |
| Wt | Weight | Edmonton<br>0.949299<br>Calgary<br>0.991455<br>Other Alberta<br>1.059497 |

NATIONAL OCCUPATIONAL CLASSIFICATION 2001[1]
Major Group Structure - Two-Digit Code Numbers

Question K2a - Demographics (KWORK)

KWORK represents the NOC two-digit Major Group Structure categories of the occupational variable K2a (Question 2a - Demographics).

The NOC Major Group Structure is as follows:

01 Senior Management Occupations
02 Middle and Other Management Occupations
03 Professional Occupations in Business and Finance
04 Skilled Administrative and Business Occupations
05 Clerical Occupations
06 Professional Occupations in Natural and Applied Sciences
07 Technical Occupations Related to Natural and Applied Sciences
08 Professional Occupations in Health
09 Technical and Skilled Occupations in Health
10 Assisting Occupations in Support of Health Services
11 Professional Occupations in Social Science, Education, Government Services and Religion
12 Paraprofessional Occupations in Law, Social Services, Education and Religion
13 Professional Occupations in Art and Culture
14 Technical and Skilled Occupations in Art, Culture, Recreation and Sport
15 Skilled Sales and Service Occupations
16 Intermediate Sales and Service Occupations
17 Elemental Sales and Service Occupations
18 Trades and Skilled Transport and Equipment Operators
19 Intermediate Occupations in Transport, Equipment Operation, Installation and Maintenance
20 Trades Helpers, Construction Labourers and Related Occupations
21 Skilled Occupations in Primary Industry
22 Intermediate Occupations in Primary Industry
23 Labourers in Primary Industry
24 Processing, Manufacturing and Utilities Supervisors and Skilled Operators
25 Processing and Manufacturing Machine Operators and Assemblers
26 Labourers in Processing, Manufacturing and Utilities

*Missing Values*
28 Homemaker-never worked (note: code assigned for this study & not part of NOC)
29 Student-never worked (note: code assigned for this study & not part of NOC)
0 No Response

[1]Source: National Occupational Classification 2001: Index of Titles.
Skills Information Division, Human Resources Development Canada.
Ottawa, Ontario Cat. No: MP53-25-2-2001E. ISBN 0-660-18376-5.

NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM 2002-CANADA[1]
Industry Sector - Two-Digit Code Numbers

Question K2c - Demographics (KINDUSTRY)

KINDUSTRY represents the NAICS two-digit Industry Sector categories of the business/organization variable K2c (Question 2c - Demographics).

The NAICS Industry Sector is as follows:

| | |
|---|---|
| 11 | Agriculture, Forestry, Fishing and Hunting |
| 21 | Mining and Oil and Gas Extraction |
| 22 | Utilities |
| 23 | Construction |
| 31 | Manufacturing - Food and Textiles |
| 32 | Manufacturing - Wood & Chemical |
| 33 | Manufacturing - Furniture & Mechanical |
| 42 | Wholesale Trade |
| 44 | Retail Trade - Retail Type 1 |
| 45 | Retail Trade - Retail Type 2 |
| 48 | Transportation & Warehousing - Transportation |
| 49 | Transportation & Warehousing - Postal, Courier & Storage |
| 51 | Information and Cultural Industries |
| 52 | Finance and Insurance |
| 53 | Real Estate and Rental and Leasing |
| 54 | Professional, Scientific and Technical Services |
| 55 | Management of Companies and Technical Services |
| 56 | Administrative and Support, Waste Management and Remediation Services |
| 61 | Educational Services |
| 62 | Health Care and Social Assistance |
| 71 | Arts, Entertainment and Recreation |
| 72 | Accommodation and Food Services |
| 81 | Other Services (except Public Administration) |
| 91 | Public Administration |

| | |
|---|---|
| 0 | No Response |
| 99 | Not Applicable |

[1]Source: North American Industry Classification System 2002, published by authority of the Minister responsible for Statistics Canada, Ottawa, Ontario, Canada. Cat. No.12-501-XPE 2002. ISBN 0-660-18982-8.

LIST OF ETHNICITIES
(Variables K9_1 to K9_4, Question 9 Demographics)

N.I.E. – Not Indicated Elsewhere

| | |
|---|---|
| 4 | Welsh |
| 5 | British |
| 10 | French Canadian |
| 16 | Amerindian |
| 17 | Canadian |
| 19 | American |
| 21 | Haitian |
| 22 | Jamaican |
| 25 | Caribbean N.I.E. |
| 27 | Argentinean |
| 29 | Chilean |
| 31 | Mexican |
| 32 | Peruvian |
| 38 | Central & South American N.I.E. |
| 40 | Afro-American |
| 43 | Black N.I.E. |
| 45 | African N.I.E. |
| 46 | Austrian |
| 47 | Belgian |
| 48 | Flemish |
| 49 | Luxembourger |
| 50 | Swiss |
| 53 | Finnish |
| 54 | Danish |
| 55 | Icelander |
| 56 | Norwegian |
| 57 | Swede |
| 58 | Scandinavian N.I.E. |
| 60 | Estonian |
| 61 | Latvian |
| 62 | Lithuanian |
| 64 | Czech |
| 66 | Hungarian |
| 67 | Romanian |
| 68 | Russian |
| 69 | Slovak |
| 72 | Albanian |
| 73 | Bulgarian |
| 74 | Croatian |
| 76 | Serbian |
| 77 | Slovene |
| 78 | Yugoslavian |
| 80 | Greek |
| 83 | Maltese |
| 84 | Portuguese |
| 85 | Spanish |
| 86 | Basque |
| 87 | Gypsy |
| 88 | European N.I.E. |
| 90 | Lebanese |
| 98 | Turk |
| 102 | Punjabi |
| 105 | Indian (Asian) |
| 107 | Pakistani |
| 108 | Sri Lankan |
| 109 | Japanese |
| 110 | Korean |
| 111 | Filipino |
| 112 | Burmese |
| 114 | Laotian |
| 115 | Thai |
| 116 | Vietnamese |
| 117 | East Indian N.I.E. |
| 120 | Mongol |
| 122 | Asian N.I.E. |
| 123 | Fiji Islander |
| 125 | Pacific Islander N.I.E. |
| 126 | Australian/New Zealander |
| 130 | Hindu |
| 131 | Sikh |
| 132 | Muslim |
| 135 | Mennonite |
| 136 | Religious N.I.E. |
| 137 | White N.I.E. |
| 140 | Ismaili |
| 142 | Iraqi |
| 144 | Gujarati |
| 149 | Ethiopian |
| 151 | Somali |
| 152 | Trinidadian/Tobagonian |
| 154 | Creole |
| 160 | Moroccan |
| 171 | West Asian N.I.E. |
| 172 | South East Asian N.I.E. |
| 173 | Indonesian |
| 208 | French |
| 209 | English |
| 210 | German |
| 211 | Scottish |
| 212 | Italian |
| 213 | Irish |
| 214 | Ukrainian |
| 215 | Chinese |
| 216 | Dutch |
| 217 | Jewish |
| 218 | Polish |
| 220 | North American Aboriginals |
| 221 | Métis |
| 213 | Irish |

91 Palestinian
78 Yugoslavian
80 Greek
92 Syrian
94 Middle East Arab N.I.E.
96 Iranian
97 Israeli
92 Syrian

*Missing Values*
997 Don't Know
998 Refusal
0 No Further Response